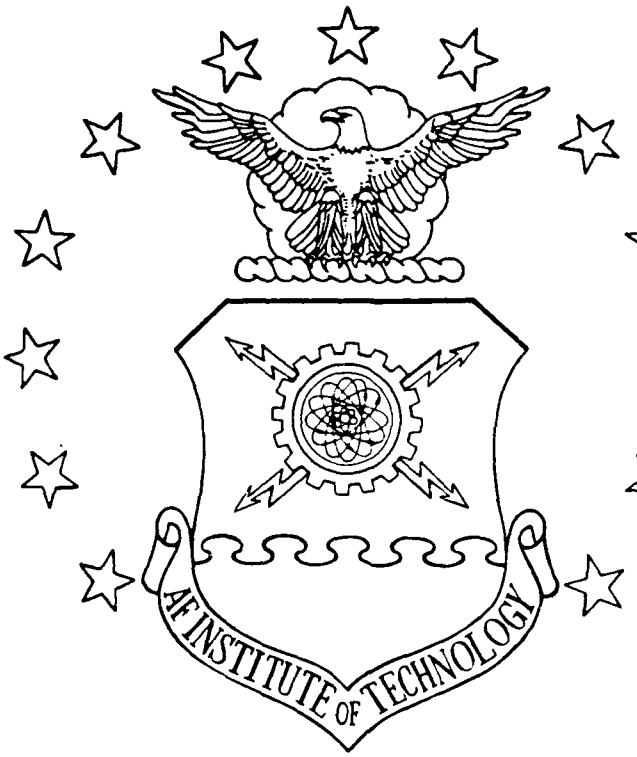

REFINEMENT OF THE AIR FORCE SYSTEMS COMMAND PRODUCTION RATE MODEL

THESIS

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THESIS

Presented to the Faculty of the School of Systems and Logistics

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In Partial Fulfillment of the

Requirements for the Degree of

Master of Science in Cost Analysis

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Preface

The purpose of this study was to refine the Air Force Systems Command (AFSC) Production Rate Model that was developed in 1984 by The Analytic Sciences Corporation (TASC). The research analyzed several new alternative model formulations in an effort to derive better weapon system production estimates.

My interest in this area goes back to my experiences as a weapon systems cost analyst, often wondering about the accuracy of my estimates in light of constant production rate changes and tradeoff analyses. This thesis is a result of my efforts to perhaps build upon a concept I wish I had found out about earlier in my career.

I am deeply indebted to my faculty advisor, Mr. Richard L. Murphy. His patience and understanding in support of my efforts are deeply appreciated. Without his knowledgeable explanations of the production rate modeling issue, statistical analysis techniques, and SAS programming, I would still be in the library or on the computer terminal.

Most importantly, I wish to thank my wife Vicki for a being a shoulder to lean on during my bouts with writer's cramp. Without her loving support and an occasional push in the back, my completion of this thesis would not have been possible.

Keith K. Agena, Captain, USAF

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Abstract

The purpose of this study was to refine the Air Force Systems Command (AFSC) Production Rate Model that was developed in 1984 by The Analytic Sciences Corporation (TASC). In 1985, under an AFSC sponsored thesis, USAF Captain Hugh Bolton addressed various shortcomings in the TASC formulation. Bolton also investigated two alternative formulations and discovered that both models provided better estimates overall than the basic learning curve model and the TASC formulation. Further evaluation of the characteristics of these two alternatives was, however, beyond the scope of his research.

The current effort analyzed several modifications to Bolton's original alternatives in an effort to derive better results. To accomplish this, four research objectives were established.

- The first objective was to develop alternative formulations by expanding and/or altering TASC's and Bolton's formulations. These models should preserve the logic of the original formulations.

- The second objective was to compare the results between TASC'S and Bolton's model formulations and the new alternative model formulations to determine which alternatives performed better and under what circumstances.

- The third objective was: (1) to investigate if statistical relationships exist for individual variables, (2) to determine which variables appear significant for different weapon systems, and (3) to identify any patterns that may exist in the occurrence of those variables.

The research was successful in evaluating these objectives. The modified formulations developed in this research effort outperformed the existing TASC and Bolton formulations. It was recommended that AFSC incorporate the new modified formulations into its Production Rate Model.

REFINEMENT OF THE AIR FORCE SYSTEMS COMMAND PRODUCTION RATE MODEL

I. Introduction

The goal of this thesis is to refine the Air Force Systems Command (AFSC) Production Rate Model by evaluating new formulations of the model in an attempt to improve on the existing formulation. If no one formulation provides consistently better estimates across all weapon systems, the thesis will also attempt to identify the conditions under which a competing alternative outperforms its competitors. Successful accomplishment of these objectives should enhance the ability of the AFSC Production Rate Model to predict weapon system production costs.

General Issue

Many of the "most serious and vexing problems in the Department of Defense's (DOD) ability to purchase weapon systems are the consequence of a mismatch between the needs of today's defense buyers and an obsolescent production culture" (5:11). It is very unusual for today's weapon systems to display a stable production rate in the midst of constant trade-offs between congressional pressures, affordable program budgets and technological innovations (5:11).

While the DOD seeks to develop and update defense systems which embody superior technology to respond to new threats, investment and support costs must remain affordable. Weapon system costs are difficult to control, however, when Congress and the DOD requires the flexibility

to change production rates and the size of annual buys yearly and more often. (5:11)

As a direct consequence, the procurement environment in which the DOD bases its decisions is very different from earlier decades when weapon system unit costs were lower and designs were simpler. The quantity of weapons system purchases vary annually in response to fluctuations in the Defense budget due to changing national objectives. Therefore, in response to control the defense budget, Congress or the DOD frequently change the programmed buy schedules during the "planning years before the contracts are let or subsequently during the lifetime of the production contracts" (5:11).

Unfortunately, fluctuating annual production quantities translate to inefficient production rates which do not allow defense contractors to produce at maximum efficiency. According to Captain Hugh Bolton, a way to achieve some measure of cost stability is to produce weapon systems at efficient and economic production rates. He cites Mr. David Acker's belief that "producing a defense system at an economic production rate can provide a financial savings, decrease the production time for the system, and decrease the time to complete deployment of the system." (3:2)

Presently, Department of Defense cost analysts use "learning curve" equations to develop weapon system production estimates in this dynamic acquisition environment. Unfortunately, the analysts' ability to accurately estimate the true cost of fluctuating programs is hampered by the learning curve's insensitivity to trade-off decisions (16:213). The real limitation of the basic learning curve is its inability to model

production policy changes that influence production rate (16:213). This means that when production policies are subject to frequent change, the basic learning curve may not provide the best predictions.

The production rate of today's and tomorrow's weapons systems no longer display an even production rate over time. Instead, production rates are "typically ragged, rising or falling sharply in response to changing perceptions of need" rather than "rising smoothly to full rate, remaining there for a number of years, and then gracefully phasing down" (5:11). This hampers the cost analyst's ability to reliably estimate weapon system production costs.

Womer notes that:

> Congressional concern and the need for better planning capabilities provide the impetus for new research in this area. The approach favored by the Department of Defense is one of estimating parametric cost equations which attempt to model cost as a function of only a few aircraft design and performance characteristics. These models often yield useful planning estimates, but Large and Gillespie show that the models may produce estimates that can be off by as much as 100 percent. The real limitation of these models is their inability to consider production policy changes which may occur prior to or during the life of a program. (16:213)

Therefore, refinement of the learning curve equation must be accomplished to capture the effects of an inconsistent procurement policy that influence production rate. As Bolton states, DOD decision makers need an analytical tool which allows them to perform tradeoffs quickly and accurately. The tools "must measure the cost impact of program schedule changes which equate directly to increases or decreases in annual production rates" to develop more accurate cost estimates. (3:2)

Specific Issue

The Air Force Systems Command Production Rate Model was developed by The Analytic Sciences Corporation (TASC) as an estimating tool for generating rough order of magnitude estimates among various production schedules for different weapon systems. The TASC model attempted to address the basic unit learning curve's inability to capture the effects of production rate changes. Bolton's thesis evaluated this model and determined that it was appropriate for its original purpose of generating budgetary estimates. However, refinements were required to address potentially erroneous assumptions made by the model prior to its use as a valid estimating tool. (3:43-44)

Bolton further showed that two alternative models he developed with the assistance of Mr. Richard L. Murphy, Assistant Professor of Quantitative Management Techniques at the Air Force Institute of Technology, gave better overall results than the basic learning curve equation and the TASC model formulation used in the Production Rate Model. A discussion of Bolton's alternative formulations will be covered in the literature review. Also, there was some evidence that one alternative provided more accurate estimates for certain types of weapon system programs. An investigation for the possible explanation of this finding was, however, beyond the scope of the intended research. (3:44)

Therefore, this thesis attempts to refine the AFSC Production Rate Model by investigating alternative model formulations which might better represent the cost/quantity/rate relationships described by TASC.

Research Objectives

In order to logically investigate the specific issue, the following research objectives have been established:

A. The first objective is to develop alternative formulations by expanding and/or altering TASC's and Bolton's formulations. These models should preserve the logic of the original formulations.

B. The second objective is to compare the results between TASC'S and Bolton's model formulations and the new alternative model formulations to determine which alternatives performed better and under what circumstances.

C. The third objective is: (1) to investigate if statistical relationships exist for individual variables, (2) to determine which variables appear significant for different weapon systems, and (3) to identify any patterns that may exist in the occurrence of those variables.

Scope of the Research

The scope of this research is limited to the evaluation of alternative models that have the same basic form as the TASC model or Bolton's quadratic formulations. The new alternatives differ in that they incorporate different sets of variables into the existing equation's structure. References made to other research in the production rate area provides a background upon which this research can be evaluated.

The findings of this thesis are based on the TASC data set provided in the TASC Production Rate Model Report (15). The data set includes

the recurring unit cost of various weapon systems adjusted for inflation. The process of eliminating the effects of inflation will normally introduce some measurement error into the data. Furthermore, the methodology employed by TASC to convert the Then-Year dollar budgetary estimates to constant Base-Year 1984 dollar estimates is not provided in the TASC documentation and therefore, could not be evaluated.

Finally, a cursory understanding of non-linear regression techniques and integral calculus is required to understand the derivation and solution of the various formulations. A formal treatment of these two subjects is not provided in this thesis. The explanation of basic concepts used in developing the results are provided at an overview level. References are provided which detail the in-depth treatment required to solve for the various alternative formulations.

II. Literature Review

Background

Various authors have sometimes referred to the learning curve and related concepts by other names such as the progress curve, the improvement curve, and the experience curve (18:303). The term learning curve will be used in this section.

First documented by T. P. Wright in 1936 (17:122-128), the learning curve suggests that as the quantity of units manufactured doubles, the number of direct labor hours it takes to produce an individual unit decreases at a constant percentage or uniform rate. (18:302)

Academicians and practitioners have developed numerous variations of the curve since then; however, the log-linear form of the unit learning curve remains as the most common type used by government and industry (1:Chap 7,8-10).

The equation of the unit learning curve formulation is:

$$Z = A * X^{b} * E \qquad (1)$$

where Z = Direct labor hours to produce the Xth unit
A = Theoretical first unit cost parameter
x = The sequential unit number or Xth unit
b = Parameter related to the rate of learning
E = Error term

The unit learning curve slope is expressed in terms of a doubling of quantity. The rate parameter b can be expressed as:

$$b = \ln s / \ln 2 \qquad (2)$$

where s = slope of the learning curve. For example, a unit curve having a slope of .80, or 80%, will have a learning curve parameter of

ln(.80)/ln 2 = -.223144/.693147 = -0.321928. An 80% learning curve slope means that unit 2 will cost 80 percent of unit 1, unit 4 will cost 80 percent of unit 2, unit 42 will cost 80 percent of unit 21, and so on for any doubling of units. (3:10)

According to Bolton, "it is fairly well accepted within the Defense Department that varying the rate at which a manufacturer produces a product will have an impact on the per unit cost" (3:3). The primary factor which impacts unit costs is the relationship between the production rate and the production capacity of the manufacturer. This relationship also depends on the ability of the manufacturer to change his existing production capability through significant capital investments in anticipation of expected production quantities. (3:4)

Unfortunately, the basic learning curve formulation does not capture the effects of either of these two production factors. Numerous formulations to account for the cost impact of production rate, however, have been proposed over the last two decades.

According to Lt Col William Cheney, Orsini (1970) experimented with the incorporation of production rate as both an additive and multiplicative term in addition to the basic unit learning curve equation and reportedly obtained better statistical results than with the basic unit curve. Fazio and Russell (1974) and Large et al. (1974) found, however, that the influence of production rate on cost cannot be predicted with confidence and that each case must be examined individually. Cheney's own work showed that cumulative quantity, delivery lead time, and maximum delivery rate were highly significant variables. These variables had the greatest explanatory effect in a

step-wise linear regression analysis he conducted in an effort to identify production parameter variables which reduced the standard error of the estimate. (4:73,173-179)

Dr. Larry L. Smith (1976) and John C. Bemis (1981) incorporated a parameter for production rate directly into.the unit curve formulation. The formulation was:

$$Z = A * X^{b} * Y^{c} \qquad (3)$$

where Y = Production rate
c = Parameter related to the rate of production
Z,A,X = As defined in equation 1.

Although the model fit some data sets rather well, there were several problems with using this log-linear based approach involving multicollinearity and the use of estimated lot plot points. (3:14-16)

Robert M. Berg, Richard L. Dennis, and James M. Jondrow (1986) suggested that the problems of estimating using the log-linear approach could be avoided by first converting equation 3 into an integral form. By setting the total cost of the lot equal to an integral with the first and last units of the lot as the bounds of integration, the total cost of the lot could then be solved through a complex iterative technique using non-linear regression. Using this technique, the residual sum of squares term was significantly reduced compared to the results obtained by the log-linear approach for the same data. A limitation of this approach, however, was that the properties of the estimators were unknown unless the size of the data set was large. (2:12-13)

The complex iterative technique used by Berg, Dennis, and Jondrow capitalized on the fact that non-linear regression models reduced the problem of multicollinearity in the variables (3:45). The technique

uses direct search methods to compute the model parameters. These include the Gauss-Newton method and the Marquardt algorithm (8:76-78). For a detailed explanation and demonstration of nonlinear regression techniques, refer to Gallant (7) (8), Neeley (11) and Neter (12).

TASC Model

The TASC model formulation is currently used in the Air Force Systems Command Production Rate Model. In order to understand the TASC concept of how production rate affects the learning curve slope, it is important to understand the nature of long-run and short-run production cost curves.

Short-run Cost Curve. The short-run cost curve assumes that the plant and equipment available to a manufacturer is relatively fixed. There is an optimal rate of production at which unit costs will be at their minimum. If the production rate is either greater or less than this optimal rate, unit costs will increase. A manufacturer who produces at a rate other than the optimal rate is not being inefficient. He is merely operating at a production rate other than the optimal rate for which the plant and equipment were designed and as a result, incurs a higher production cost. Inefficient production/cost points lie above the short-run cost curve. (10)

Long-run Cost Curve. The long-run cost curve assumes that the manufacturer is able to change his plant and equipment to minimize his cost for an anticipated rate of production. In other words, for any given rate of production there exists a plant that is able to produce that output at the lowest unit cost. Furthermore, this plant will have

its own short-run cost curve. In fact, the surface of the long-run cost curve is generated by connecting the minimum cost points of all possible short run cost curves (9:191-192). Both the short and long-run cost curves have a shape similar to a "bathtub." For this reason, they are frequently referred to as bathtub curves. (10)

The shape of the long-run cost curve implies that there is one configuration of plant and equipment with an optimal rate of production that equates to the absolute minimum unit production costs (9:191-192). If minimizing unit production costs was the sole goal of an enterprise, this is the configuration and production rate they would select. However, for every possible production rate there is a plant configuration that minimizes unit production costs (9:199-201). The particular configuration of plant and equipment selected by a manufacturer depends on his perception of what the production rate will be over the long-run curve (9:191-192). Unfortunately, a manufacturer cannot make large scale changes to this plant and equipment to accommodate short-run fluctuations in production rates. This means that when short-run fluctuations in production rates occur, manufacturers will frequently find themselves producing at other than the optimal rate of production regardless of the particular configuration of plant and equipment they select. (10)

Figure 1 is a graphic representation of the bathtub curve effect that shows various short-run curves for plants of varying sizes, levels of facility capability, capital investment, manpower availability and anticipated production output as specified by the government for a typical weapon system program. (14:8-10)

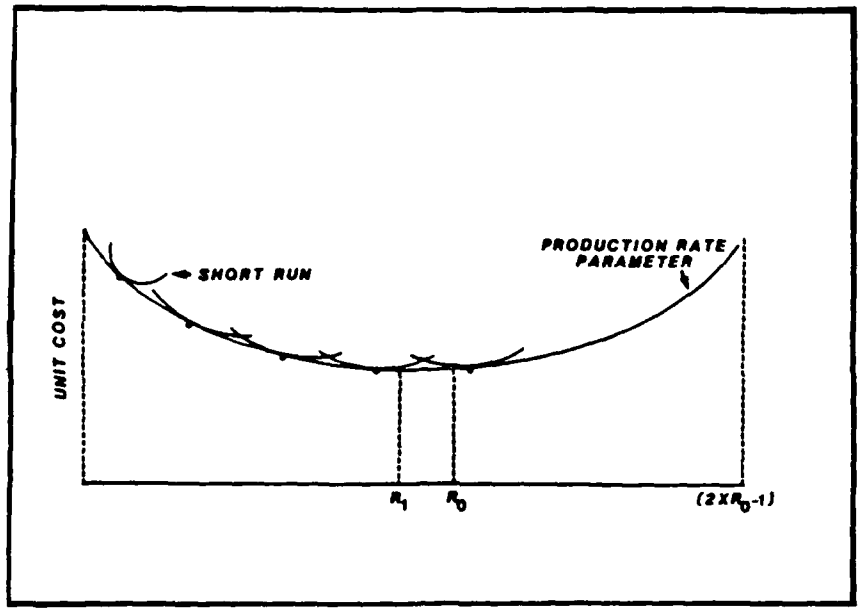

Figure 1. "Bathtub" Shaped Average Cost Curve (14:8)

The TASC concept of production costs seems to mix the long run and short run cost curves. TASC seems to assume that all long run adjustments are made prior to and in anticipation of expected procurements. Production begins with a plant and equipment that has been configured for a particular procurement quantity. Furthermore, TASC assumes that each manufacturer equates his optimal rate of production to the maximum planned rate of production. Finally, TASC seems to assume that once a production decision is made, further adjustments are no longer possible. Their concept of the relationship between unit costs and production rates is a short run concept where the existing plant and equipment is always optimized for the maximum planned production rate. As a result of these assumptions, all actual production rates are either at or below the optimal production rate. Since actual experience has indicated that actual production rates tend

to be less than planned production rates, manufacturers that behave according to the TASC assumptions would never produce at rates greater than the optimum rate. (10)

In addition, TASC assumes that the short run curve is symmetrical about the optimal rate of production (R_0) (3:18-19). Equal deviations in production below and above R_0 have the same cost impact. Since TASC assumes that actual production rates are always less than optimal rates, this assumption of symmetry has no impact on the methodology used to estimate the parameters of their model. However, the assumption is necessary if the model is to be used to estimate production costs for production rates above R_0. (10)

A graphic representation of the intended concept is provided in Figure 2. The unit cost and cumulative quantity plane represents the basic learning curve as presented in equation 1. The inclusion of the production rate plane represents incorporation of the production rate parameter (Y). As the cumulative quantity doubles, unit costs decrease at some constant percentage as long as the production rate remains constant. Equation 3 says that unit costs increase whenever the production rate deviates from the optimal production rate. This behavior is reflected by the parabola which rises from the optimal production rate. Therefore, a manufacturer could incur an increase in unit costs even though he has increased the cumulative quantity produced. The surface initialization point (SIP) is similar in concept to the typical first unit cost or "A" in the basic learning curve equation (14:12). The difference is that the SIP assumes a different value depending upon the slope of the production rate curve (14:12).

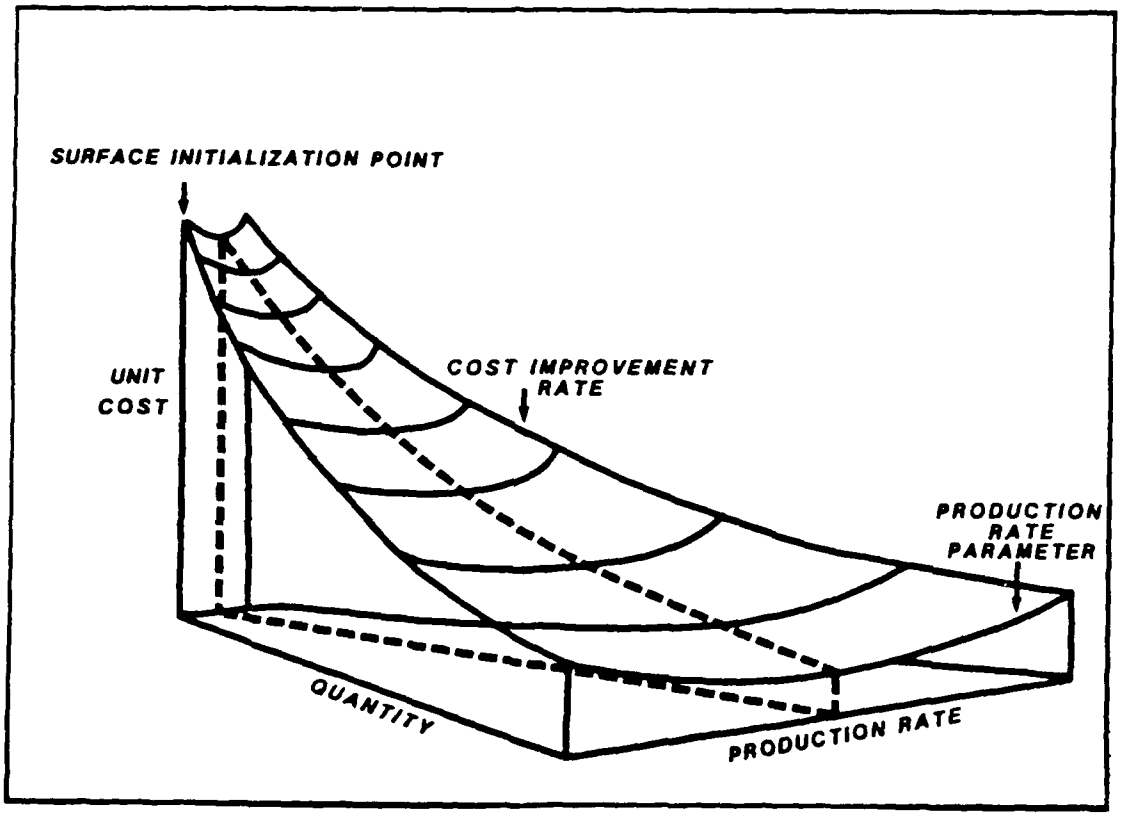

Figure 2. The $Z = A*X^{b}*Y^{c}$ Model Formulation (14:2)

According to Murphy, the TASC equation is not capable of producing the relationship depicted in Figure 2. A particular weakness of the model is that it will not provide an empirical determination of the value of R_0. This is undoubtedly the motivation behind the assumptions made by TASC to justify their model formulation. (10)

In conclusion, even though the TASC model is based on some very constraining and questionable assumptions, it still serves as the basis for the Production Rate Model.

TASC Formulation. The TASC formulation is the same as Smith's equation (3). The difference is that TASC uses the non-linear method to calculate the model parameters. The model formulation is:

$$Z = A * X^b * Y^c \quad (4)$$

where

Z = Cost of unit X
A = Surface Initialization Point related to the first unit cost
X = Cumulative quantity
b = Unknown parameter related to the rate of learning
Y = Production rate (Annual Buy schedules serve as a proxy)
c = Unknown parameter related to the rate of production

Source: (3:14)

TASC solves this equation by first estimating the total cost for each lot by integrating over the total number of units as shown:

$$TC_i' = \int_{Xl_i}^{Xu_i} AX^b Y_i^c \, dX = [A/(b+1)][Xu_i^{(b+1)} - Xl_i^{(b+1)}][Y_i^c] \quad (5)$$

where

TC_i' = Estimated total cost of lot i
Y_i = Production rate for lot i
Xl_i = Cumulative quantity through lot i-1
Xu_i = Cumulative quantity through lot i
A = Surface Initialization point related to the first unit cost
b = Unknown parameter related to the rate of learning
c = Unknown parameter related to the production rate

Source: (3:18-20)

The TC, Y, Xl and Xu variables are already known for each lot. The SAS procedure then solves for the unknown parameters A, b, and c using the Marquardt algorithm. The SAS programs used to solve TASC's model and the following alternative models are outlined in Appendix C of Bolton's thesis (3:C1-C6).

Bolton's Alternative One Formulation

Bolton's first alternative formulation (Alt 1) adds an additional variable to the TASC model formulation. The variable captures the effect of a change in production rate from one lot to the next. Bolton states that this variable is as important in explaining the cost impact of production rate as the production rate itself (3:26). He feels that when the production rate moves from a low rate to a high rate or from a high rate to a low rate, it has an impact "on the efficiency of the production process which would not be captured by looking at production rate alone" (3:26).

According to Bolton, this formulation reverts back to the TASC form if the production rate between lots is stable. The drawback is that this model is based on the same set of assumptions logic as the TASC formulations and subject to the same criticism. (3:38)

The alternative one formulation is shown below.

$$Z = A * X^b * Y^c * R^d \qquad (6)$$

where

R = Ratio of the rate in lot i to the rate in lot i-1
d = Unknown production ratio parameter
X,Y = Variables as defined in equation 4.
A,b,c = Unknown model parameters as defined in equation 4.

Bolton uses the TASC approach to solve this model. He solves this model by converting equation 6 from a formulation that reflects unit cost to one that reflects total cost. He sets the total cost of the lot (TC) equal to an integral form and solves for this value over the upper and lower bounds of integration by the number of units as shown on the following page:

$$TC_i = \int_{Xl_i}^{Xu_i} AX^b Y_i^c R_i^d \, dX = [A/(b+1)][Xu_i^{(b+1)} - Xl_i^{(b+1)}][Y_i^c R_i^d] \quad (7)$$

where the variables and unknown parameters are as defined in equations 4 and 5. The SAS non-linear regression procedure then solves for the model parameters using the Marquardt algorithm. (3:18-20,26)

Bolton's Alternative Two Formulation

Bolton's Alternative Two (Alt 2) was formulated to solve directly for the optimal rate of production. As noted earlier, TASC's formulation models only the left hand side of the parabola in Figure 1. Bolton overcomes this deficiency by including a quadratic function expressed as a function of the production rate (Y) to solve directly for R_0's optimal value. (3:26)

The alternative two formulation is shown below:

$$Z = A * X^{(b + c*Y + d*Y^2)} \quad (8)$$

where

b,c,d = Quadratic model parameters (d>0)
X,Y = Variables as defined in equation 4.
A = Unknown parameter as defined in equation 4.

The quadratic model parameters solve directly for the optimal rate of production. The constraint that "d" must be positive is necessary for this quadratic to have a minimum. Notice that the parameters b,c, and d are associated with different terms in this equation than in previous equations. As before, Bolton solves this model by first integrating the total cost of the lot by the number of units as shown on the following page:

$$TC_i' = \int_{Xl_i}^{Xu_i} AX^{(b+cYi+dYi^2)}\, dx$$

$$TC_i' = A/(b+cY_i + dY_i^2 + 1)[Xu_i(b+cY_i+dY_i^2+1) - Xl_i(b+cY_i+dY_i^2+1)] \quad (9)$$

where the unknown parameters b,c,d are defined in equation 8 and the remaining variables and parameter A are as defined in equations 4 and 5. (3:39)

According to Bolton, as long as the parameter value associated with the quadratic term is significant, "the formulation will produce an optimum production rate, R_0, at which unit costs will decline along the steepest possible learning curve slope" (3:27). If the production rate changes from R_0 in either direction, "the slope of the learning curve becomes less steep, which means a slower rate of learning" (3:27). If the parameters c and d are not statistically significant, the formulation reverts back to the standard unit learning curve formulation (3:26-27,40).

Conclusion

Bolton concluded that based on a residual sum of squares comparison for each weapon system, both the Alt 1 and Alt 2 model formulations consistently provided more accurate estimates than both the basic unit learning curve equation and the TASC formulation. In addition, although Alt 1 provided better results than Alt 2 on an overall basis, the results suggested that Alt 2 provided more accurate estimates than Alt 1

for certain types of weapon systems. This assertion was not investigated, however, as it was beyond the scope of his research. (3:43-44)

Bolton's final recommendation was that Air Force Systems Command adopt Alt 1 as the new production rate model formulation based on its overall performance in reducing the residual sum of squares error term. (3:44)

III. Methodology

Research Objective One

- The first objective is to develop alternative formulations by expanding and/or altering TASC's and Bolton's formulations. These models should preserve the logic of the original formulations.

Background. Bolton's alternative formulations identified two variables to account for the variations in production rate. These were defined as production rate (Y) and ratio of the production rate from lot i to lot i-1 (R). Since the scope of this research is limited to an analysis of variables or equation structures that Bolton had previously identified, no new variables will be introduced in this research. Therefore, the goal of this objective is to modify either the TASC formulation or the existing Bolton formulations in an effort to find alternative formulations. (3:26-27)

Procedure. First, the TASC formulation was expanded to incorporate the ratio (R) variable as a quadratic exponent of the production rate. It was envisioned that inclusion of the ratio variable as a quadratic exponent would capture the effect of changing rates of production and lead to calculation of the optimal ratio of production. This expanded formulation was called Modified Alternative One (Mod Alt 1). The expanded model is presented below:

Modified Alternative One:

$$Z = A * X^{b} * Y^{(c + dR + eR^2)} \qquad (10)$$

where

Z = Cost of unit X
A = Surface Initialization Point related to the first unit cost
X = Cumulative quantity
b = Unknown parameter related to the rate of learning
Y = Production rate (Annual Buy schedules serve as a proxy)

R = (Ratio of the rate in lot i to the rate in lot i-1)
c,d,e = Unknown quadratic parameters related to R

Second, Bolton's Alt 2 was modified by expanding the exponent of X to include the production ratio (M) as a quadratic function in addition to the production rate variable (Y). This allowed for calculation of both the optimal rate of production and the optimal ratio of production. By setting M equal to the ratio of production (R) minus one, the equation reverts to Bolton's Alt 2 when the production rate is stable. For example, in the event that there is no change from lot i to lot i-1, the value for R is one. The production ratio equals zero (M = 1 minus 1), the quadratic function for production ratio drops out, and the equation reverts back to Bolton's Alt 2. This alternative formulation was called Modified Alternative Two (Mod Alt 2). The expanded model is presented below:

Modified Alternative Two:

$$Z = A * X^{(b + cY + dY^2 + eM + fM^2)} \quad (11)$$

where

Z = Cost of unit X
A = Surface Initialization Point related to the first unit cost
X = Cumulative quantity
Y = Production rate (Annual Buy schedules serve as a proxy)
M = (Ratio of the rate in lot i to the rate in lot i-1) - 1
b,c,d,e,f = Unknown quadratic parameters related to Y and R

Bolton's Alt 2 expressed the exponent of X as a quadratic function of the production rate (Y). Mod Alt 2 expresses the exponent of X as a quadratic function of both the production rate (R) and the production ratio (M). A final alternative model was formulated by expressing the exponent of X as a quadratic function of the production ratio (R) only without reference to the production rate. This model assumes that

changes cost are affected by changes in the rate of production and not the level of production. This alternative formulation was called Modified Alternative Three (Mod Alt 3). The expanded model is presented below:

Modified Alternative Three:

$$Z = A * X^{(b + cR + dR^2)} \qquad (12)$$

where

Z = Cost of unit X
A = Surface Initialization Point related to the first unit cost
X = Cumulative quantity
R = (Ratio of the rate in lot i to the rate in lot i-1)
b,c,d = Unknown quadratic parameters related to R

In conclusion, three modified formulations were identified as potential candidates for evaluation and comparison against the TASC and Bolton formulations. The methodology for calculating and analyzing the modified formulations are discussed in the next section.

Research Objective Two

- The second objective is to compare the results between TASC'S and Bolton's model formulations and the new alternative model formulations to determine which alternatives performed better and under what circumstances.

Background. A drawback to using non-linear regression is that methods of analyzing the model are limited to that of comparison. In non-linear regression, the usual tests such as the F-ratio and t-test are not appropriate indicators of model fit and specification. Although these test statistics may be calculated, exact conclusions for specification and fit at any level cannot be drawn due to violations of assumptions usually made in linear regression about the normal distribution of the parameter values. Because the nature of the

parameter distributions in non-linear regression may not be assumed to be normal, the inferences made from the test statistics are not valid. (6:484)

In view of this fact, the only valid criteria for comparison among the selected "modified" alternatives in comparison to Bolton's alternatives is the residual sum of squares term for each weapon system on a case-by-case basis. The residual sum of squares is a term that measures the observed vertical deviation of the dependent variable from the fitted regression line (12:44). Since this vertical deviation represents the error in the estimate when compared to actual costs, a measure of comparison based on these vertical deviations seems reasonable.

Procedure. First, a SAS non-linear regression program was written for the basic learning curve equation in equation 1. The results from the non-linear regression of this equation could then be directly compared against the modified equations. In Bolton's thesis, the non-linear alternative results were compared against the linear results of the basic learning curve. This comparison was not an equivalent one as the effects of the log-linear transformation of the basic learning curve showed up in the residual sum of squares results.

Second, SAS non-linear regression programs for each of the selected "modified" alternatives were developed and regressed against the entire TASC data set.

Third, the results for each modified alternative were tabulated and compared to the TASC, Basic Learning Curve and original Bolton formulations. If a modified alternative consistently yielded the lowest

sum of squared residuals value for each of the weapon systems, then that alternative was considered the superior technique and recommended for immediate incorporation into the AFSC Production Rate Model. If the analysis showed no one alternative to be superior, then the circumstances under which each alternative appeared to perform best were considered and general guidelines for their use were suggested. If none of the modified formulations produced better results, then Bolton's recommendation was left unchanged.

Research Objective Three

- The third objective is: (1) to investigate if statistical relationships exist for individual variables, (2) to determine which variables appear significant for different weapon systems, and (3) to identify any patterns that may exist in the occurrence of those variables.

Background. Non-linear regression does not allow for testing the statistical significance of individual variables except as an asymptotic property. Therefore, even when the reduction in the sum of squares seemed to strongly indicate that one formulation is more significant than another, the significance or insignificance of individual variables in the equation remained an unresolved issue.

Procedure. First, Bolton's alternative formulations and the three modified alternatives were transformed from their non-linear form into their log-linear components. This transformation permitted use of the SAS stepwise regression procedure to identify the most significant variables within each modified formulation. The transformed models are shown on the next page:

Alt 1:

$$\ln Z = \ln A + b*(\ln X) + c*(\ln Y) + d*(\ln R) \quad (13)$$

where the variables are as defined in equation 6.

Alt 2:

$$\ln Z = \ln A + b*(\ln X) + c*Y*(\ln X) + d*Y^2*(\ln X) \quad (14)$$

where the variables are as defined in equation 8.

Modified Alt 1:

$$\ln Z = \ln A + b*(\ln X) + c*(\ln Y) + d*R*(\ln Y) + e*R^2*(\ln Y) \quad (15)$$

where the variables are as defined in equation 10.

Modified Alt 2:

$$\ln Z = \ln A + b*(\ln X) + c*Y*(\ln X) + d*Y^2*(\ln X) + e*R*(\ln X) + f*R^2*(\ln X) \quad (16)$$

where the variables are as defined in equation 11.

Modified Alt 3:

$$\ln Z = \ln A + B*(\ln X) + c*R*(\ln X) + D*R^2*(\ln X) \quad (17)$$

where the variables are as defined in equation 12.

In order to correctly perform the stepwise regression, Z had to be redefined to represent the lot average cost since the TASC data set does not contain unit values. This meant that X had to be defined to represent the unit that cost the same as the average cost for the lot. Unfortunately, X cannot be determined without knowing the slope of the learning curve. The solution was to use a rule of thumb to calculate the lot plot points. See the discussion in Appendix A for the calculation rules used to compute the rule of thumb plot points. Appendix B contains the SAS programs used in this analysis.

The results of the SAS stepwise regression runs were then analyzed to determine the frequency with which the variables appeared significant in each formulation. Both the variables and the parameter values were analyzed to determine whether or not a pattern existed within each weapon system type by model formulation.

IV. Findings

This chapter summarizes the results and analysis in the investigation of additional alternative formulations for the AFSC production rate model.

Research Objective One

- The first objective is to develop alternative formulations by expanding and/or altering TASC's and Bolton's formulations. These models should preserve the logic of the original formulations.

The three modified formulations were solved by first integrating the total cost of the lot i over the number of units in the lot and then creating SAS non-linear regression programs that used the Marquardt algorithm to solve for the unknown model parameters. The SAS programs are provided in Appendix B. The modified alternative formulations and the integration results are provided below:

Modified Alternative One:

$$Z = A * X^{b} * Y^{(c + dR + eR^2)} \tag{10}$$

The integration result was:

$$TC_i' = \int_{Xl_i}^{Xu_i} AX^{b}Y^{(c+dRi+eRi^2)}\,dx$$

$$TC_i' = AY_i^{(c+dRi+eRi^2)}/(b+1)[Xu_i^{(b+1)} - Xl_i^{(b+1)}] \tag{18}$$

where the variables and unknown parameters are as defined in equation 10.

Modified Alternative Two:

$$Z = A * X^{(b + cY + dY^2 + eM + fM^2)} \quad (11)$$

The integration result was:

$$TC_i' = \int_{Xl_i}^{Xu_i} AX^{(b + cYi + dYi^2 + eMi + fMi^2)} dx$$

$$TC_i' = A/(b+cY_i+dY_i^2+eM_i+fM_i^2+1)[Xu_i(b+cY_i+dY_i^2+eM_i+fM_i^2+1) - Xl_i(b+cY_i+dY_i^2+eM_i+fM_i^2+1)] \quad (19)$$

where the variables and unknown parameters are as defined in equation 11.

Modified Alternative Three:

$$Z = A * X^{(b + cR + dR^2)} \quad (12)$$

The integration result was:

$$TC_i' = \int_{Xl_i}^{Xu_i} AX^{(b + cRi + dRi^2)} dx$$

$$TC_i' = A/(b+cR_i+dR_i^2+1)[Xu_i(b+cR_i+dR_i^2+1) - Xl_i(b+cR_i+dR_i^2+1)] \quad (20)$$

where the variables and unknown quadratic parameters are as defined in equation 12.

Tables 1 through 5 provide the parameter estimates obtained by weapon system for each formulation. These tables are provided in the following pages:

TABLE 1

WEAPON SYSTEM PARAMETER COMPARISON
ALTERNATIVE 1

TYPE	PROGRAM	B	C	D
BOMBERS	B-1B	-.1806	-.1507	.0332
	B-52	-.2067	-.0764	-.1161
	B-58	----------	N/A	----------
FIGHTERS	A-10	.0355	-.2467	.0056
	F-100	-.2024	.0536	-.0573
	F-101	-.2990	.1312	-.0754
	F-102	-.4562	.1997	-.0492
	F-106	----------	N/A	----------
	F-15A/B	-.1294	.0151	.0192
	F-15C/D	-.0807	-.3832	.3985
	F-15E	.0480	-.6597	.2407
	F-16A/B	-.2159	.0885	.3464
	F-16E	.0383	-.2735	.2952
ELECTRONIC	ARC-109V	1.7835	-1.7352	1.2660
	ARC-54	-.1504	.1061	-.0408
	ASN-63	-.2226	-.2341	.1081
	ASN-70	.0025	-.0421	.0503
	ASN-99	.0339	-.3199	.1800
	ASN-108	-.2392	.2790	-.1480
	ASQ-133	-.1049	-.1204	.0469
	ASW-32	.2965	-.5865	.6544
	CP-1035N	-.1233	.2703	-.3533
	JTIDS	-.2056	-.0160	-.0590
	LANT(NAV)	-.1134	-.0061	.0015
	LANT(TAR)	-.1050	-.0049	.0023
	LANT(REC)	-.1434	.0023	-.0028
HELICOPTER	HH-52	-.3877	-.6510	.2866
	CH-46	-.1202	-.2384	-.0105
	H-53	-.1349	-.0003	-.0142
	CH-47	-.0390	-.3183	.0975
	H-54	-.0569	-.2188	.0107
	HH-60D	-.0543	-.0450	-.0125
	SH-3	-.1706	.0985	.0255
ARMAMENT	LLLGB	-.1692	-.0042	-.0013
	CEM	-.3398	.2121	-.1542
	GBU-15	-.2477	.5233	-.1385
MISSILE	AMRAAM	-.3439	-.0092	-.0257
	HARM	-.1851	-.0845	-.0229
	IIR	-.1486	-.1285	-.0497
	AIM7F(R)	-.3452	-.0895	-.0968
	AIM7F(GD)	-.4472	.0217	-.0614

Source (3:D55-D74)

TABLE 2

WEAPON SYSTEM PARAMETER COMPARISON
ALTERNATIVE 2

TYPE	PROGRAM	B	C	D
BOMBERS	B-1B	-.2347	-.0016	.0000
	B-52	-.0759	-.0019	.0000
	B-58	2.1100	-.0163	.0029
FIGHTERS	A-10	.0969	-.0014	.0000
	F-100	-.0022	-.0005	.0000
	F-101	-.2622	.0001	-.0000
	F-102	-.4703	.0005	-.0000
	F-106	-.2431	-.0046	.0000
	F-15A/B	-.1242	-.0008	.0000
	F-15C/D	.6322	-.0109	.0000
	F-15E	.3989	-.0083	.0000
	F-16A/B	-.8475	.0075	-.0000
	F-16E	-1.8332	.0199	-.0000
ELECTRONIC	ARC-109V	.7989	-.0076	.0000
	ARC-54	-.1907	.0001	-.0000
	ASN-63	.1866	-.0001	-.0000
	ASN-70	.0403	-.0004	.0000
	ASN-99	.1454	-.0003	.0000
	ASN-108	.0545	-.0009	.0000
	ASQ-133	-.0719	-.0019	.0000
	ASW-32	-.2392	.0005	.0000
	CP-1035N	-.3488	.0115	-.0000
	JTIDS	-.0077	-.0052	.0000
	LANT(NAV)	-.1091	-.0000	.0000
	LANT(TAR)	-.1012	-.0000	.0000
	LANT(REC)	-.2419	.0021	-.0000
HELICOPTER	HH-52	.0522	-.0194	.0006
	CH-46	-.0967	-.0009	.0000
	H-53	-.1091	-.0007	.0000
	CH-47	-.0364	-.0015	.0000
	H-54	-.1021	.0079	-.0002
	HH-60D	-.4634	.0260	-.0004
	SH-3	-.1386	-.0015	.0000
ARMAMENT	LLLGB	-.1621	-.0000	.0000
	CEM	-.2708	.0000	-.0000
	GBU-15	-.1049	-.0003	.0000
MISSILE	AMRAAM	-.3450	-.0000	.0000
	HARM	-.1688	-.0000	.0000
	IIR	-.0977	-.0000	.0000
	AIM7F(R)	-.3173	-.0000	.0000
	AIM7F(GD)	-.4571	.0000	-.0000

Source (3:D73-D95)

TABLE 3

WEAPON SYSTEM PARAMETER COMPARISON
MODIFIED ALTERNATIVE 1

TYPE	PROGRAM	B	C	D	E
BOMBERS	B-1B	-.1207	-1.2592	.0172	-.0016
	B-52	-.1979	-1.0896	-.0093	-.0044
	B-58	-.3797	.4179	-.8730	.2762
FIGHTERS	A-10	.0516	-1.2789	.0152	-.0023
	F-100	-.3846	-.3478	-.2745	.0109
	F-101	-.2826	.9207	-.1012	.0227
	F-102	-.5904	-.2580	-.0105	-.0039
	F-106	-.5381	-.1000	-.2431	.0406
	F-15A/B	-.1492	-.9314	-.0087	.0019
	F-15C/D	-.0754	-1.4984	.1672	-.0319
	F-15E	----------	N/A	----------	
	F-16A/B	----------	N/A	----------	
	F-16E	----------	N/A	----------	
ELECTRONIC	ARC-109V	-.5732	-.0544	-.1365	.0180
	ARC-54	----------	N/A	----------	
	ASN-63	-.0884	-1.1732	.0865	-.0324
	ASN-70	-.0496	-1.0721	.0092	.0025
	ASN-99	.0102	-1.6121	.2108	-.0524
	ASN-108	-.4176	-.3241	-.1278	.0240
	ASQ-133	-.0859	-1.2165	.0657	-.0128
	ASW-32	.8025	-4.6111	1.8433	-.5587
	CP-1035N	-.1243	-.7330	.0186	-.0295
	JTIDS	----------	N/A	----------	
	LANT(NAV)	-.1135	-1.0013	-.0002	.0001
	LANT(TAR)	-.1052	-.9969	-.0002	.0000
	LANT(REC)	-.0880	-1.2815	.1382	-.0383
HELICOPTER	HH-52	-.3644	-1.7932	.3831	-.1582
	CH-46	-.1091	-1.2527	-.0337	.0121
	H-53	-.1564	-.9879	.0103	-.0008
	CH-47	-.0467	-1.4014	.1115	-.0322
	H-54	-.2368	-.5215	-.3659	.0693
	HH-60D	-.2499	-.5810	-.1169	.0112
	SH-3	-.1688	-1.0530	.1097	-.0316
ARMAMENT	LLLGB	----------	N/A	----------	
	CEM	----------	N/A	----------	
	GBU-15	-.2109	-.6307	.0137	-.0040
MISSILE	AMRAAM	-.3533	-.9827	-.0080	.0010
	HARM	-.1713	-1.1188	.0035	-.0017
	IIR	----------	N/A	----------	
	AIM7F(R)	-.3271	-1.1410	.0140	-.0069
	AIM7F(GD)	-.4108	-1.0006	-.0117	.0020

TABLE 4

WEAPON SYSTEM PARAMETER COMPARISON
MODIFIED ALTERNATIVE 2

TYPE	PROGRAM	B	C	D	E	F
BOMBERS	B-1B	-.2627	-.0067	-.0001	.0003	-.0000
	B-52	-.1422	-.0214	.0040	-.0016	.0000
	B-58	.4285	.0188	.4028	-.0038	-.0003
FIGHTERS	A-10	.0649	-.0043	.0004	-.0009	.0000
	F-100	----------	----------	N/A	----------	----------
	F-101	-.1262	.0033	-.0223	-.0018	.0000
	F-102	----------	----------	N/A	----------	----------
	F-106	.0833	.0950	.0260	-.0072	.0000
	F-15A/B	-.1111	.0057	-.0012	-.0010	.0000
	F-15C/D	.7189	-.0170	.1002	-.0083	.0000
	F-15E	.3233	.1000	.0273	.0004	-.0000
	F-16A/B	----------	----------	N/A	----------	----------
	F-16E	-4.3335	-.1650	.4009	.0489	-.0001
ELECTRONIC	ARC-109V	-.1148	-.0278	.0062	-.0000	.0000
	ARC-54	----------	----------	N/A	----------	----------
	ASN-63	-.2133	.0285	-.0182	-.0003	.0000
	ASN-70	.0948	.0232	.0238	-.0002	.0000
	ASN-99	.1820	.0693	-.0363	-.0011	.0000
	ASN-108	-.1229	-.0226	.0065	-.0000	.0000
	ASQ-133	.0157	.1149	-.0421	.0000	-.0000
	ASW-32	3.4025	1.6793	-1.6572	-.0744	.0004
	CP-1035N	-.1845	.1531	-.2041	.0052	-.0000
	JTIDS	-.3744	-.2036	.2806	.0014	.0000
	LANT(NAV)	-.1365	-.0014	.0004	.0003	-.0000
	LANT(TAR)	-.2012	-.0047	.0015	.0014	-.0000
	LANT(REC)	-.0435	.0438	-.0258	-.0001	-.0000
HELICOPTER	HH-52	----------	----------	N/A	----------	----------
	CH-46	-.1623	-.0367	-.0074	-.0014	.0000
	H-53	-.0890	.0223	-.0017	-.0035	.0000
	CH-47	-.0114	.0248	-.0281	-.0017	.0000
	H-54	-.1152	.0673	-.0295	.0127	-.0005
	HH-60D	-.0214	.0146	-.0026	-.0012	-.0000
	SH-3	-.0557	.0226	-.0025	-.0038	.0000
ARMAMENT	LLLGB	----------	----------	N/A	----------	----------
	CEM	----------	----------	N/A	----------	----------
	GBU-15	-.0972	.0159	-.0046	-.0002	.0000
MISSILE	AMRAAM	----------	----------	N/A	----------	----------
	HARM	----------	----------	N/A	----------	----------
	IIR	----------	----------	N/A	----------	----------
	AIM7F(R)	----------	----------	N/A	----------	----------
	AIM7F(GD)	----------	----------	N/A	----------	----------

TABLE 5

WEAPON SYSTEM PARAMETER COMPARISON
MODIFIED ALTERNATIVE 3

TYPE	PROGRAM	B	C	D
BOMBERS	B-1B	-.3170	.0100	-.0023
	B-52	-.2192	-.0293	.0014
	B-58	.1019	-.6367	.2367
FIGHTERS	A-10	-.0492	-.0731	.0113
	F-100	-.1103	-.1199	.0047
	F-101	-.2147	-.0764	.0175
	F-102	-.3859	-.0125	.0034
	F-106	-.3855	-.1277	.0277
	F-15A/B	-.1321	.0051	-.0005
	F-15C/D	-.2234	.5284	-.2230
	F-15E	-.5854	.9111	-.3897
	F-16A/B	-.2748	.0763	-.0035
	F-16E	-.2620	.4134	-.1586
ELECTRONIC	ARC-109V	.1184	-.0275	.0105
	ARC-54	-.1100	.0032	-.0003
	ASN-63	.0110	.0542	-.0237
	ASN-70	.0322	.0003	.0350
	ASN-99	-.0524	.0555	-.0044
	ASN-108	.0143	-.0341	.0122
	ASQ-133	-.1710	.0144	-.0033
	ASW-32	-.5831	.6240	-.2020
	CP-1035N	-.1133	.1630	-.0722
	JTIDS	-.1878	-.0266	.0057
	LANT(NAV)	-.1133	-.0004	.0001
	LANT(TAR)	-.1050	-.0002	.0000
	LANT(REC)	-.1481	.0081	-.0025
HELICOPTER	HH-52	-.3389	.3010	-.1606
	CH-46	-.2009	-.1048	-.0074
	H-53	-.1463	.0022	-.0002
	CH-47	-.1952	.0334	-.0185
	H-54	-.0427	-.1451	.0270
	HH-60D	-.0652	-.0159	.0013
	SH-3	-.2225	.0798	-.0227
ARMAMENT	LLLGB	-.1720	.0011	-.0004
	CEM	-.1953	.0042	-.0015
	GBU-15	-.0477	.0411	-.0069
MISSILE	AMRAAM	-.3430	-.0063	.0007
	HARM	-.2195	-.0173	.0029
	IIR	-.2178	-.0277	.0044
	AIM7F(R)	-.3803	-.0075	-.0018
	AIM7F(GD)	-.4021	-.0157	.0028

Research Objective Two

- The second objective is to compare the results between TASC'S and Bolton's model formulations and the new alternative model formulations to determine which alternatives performed better and under what circumstances.

The three modified formulations were compared with the TASC and Bolton formulations to determine the formulation which yielded the lowest residual sum of squares term. The results of each SAS non-linear regression computer run is summarized in Table 6, the Residual Sum of Squares Summary.

A brief explanation of the symbols used is presented here. The "*" indicates that no value was calculated for that weapon system using that alternative because of the inadequate number of observations in the data. The N/A indicates that no result was generated, either because the equation did not converge within 100 iterations or because the values calculated for a certain parameter or partial derivative in the equation exceeded the capacity of the SAS non-linear procedure. The bold italicized numbers for each weapon system indicates the lowest residual sum of squares value among the various formulations for that particular program. The LC column produces the results of the basic learning curve equation computed by the non-linear regression procedure in SAS.

Table 6 is presented on the following page. Note that the sum of squares results for the TASC, Alt 1 and Alt 2 values are from Table II in Bolton's thesis (5:41).

TABLE 6

RESIDUAL SUM OF SQUARES SUMMARY

PROGRAM	LC	TASC	ALT1	ALT2	MALT1	MALT2	MALT3
BOMBERS							
B-1B	18733	12451	10352	5950	*	*	11308
B-52	2783352	2448210	2325494	2001295	2212807	1887607	2390182
B-58	579983	483386	N/A	*	*	*	*
FIGHTERS							
A-10	43551	8904	8877	9102	8637	8685	18338
F-100	41205	40716	29188	37852	*	N/A	17252
F-101	25862	23846	18336	20329	8620	*	13086
F-102	9600	608	*	*	*	*	N/A
F-106	48383	47059	N/A	*	*	*	*
F-15 A/B	7010	6603	5678	507	4843	*	5368
F-15 C/D	85507	51443	10637	17138	10329	445	35208
F-15 E	34783	26000	18494	25909	N/A	7456	31440
F-16 A/B	102620	85449	74316	77043	N/A	N/A	71871
F-16 E	348137	347668	307960	114552	N/A	160	318515
ELECTRONIC							
ARC-109V	.094	.093	.035	.023	*	*	.017
ARC-54	6.143	6.611	1.131	1.309	N/A	N/A	2.680
ASN-63	33.199	32.441	20.407	16.450	11.127	7.382	14.268
ASN-70	.018	.018	.003	.003	.01	.001	.010
ASN-99	10.397	4.405	2.648	3.468	1.300	.360	5.800
ASN-108	.795	.795	.369	.243	*	*	.183
ASQ-133	3.279	3.015	2.499	1.989	1.950	*	3.101
ASW-32	6.760	7.707	3.940	3.695	.210	*	3.237
CP-1035N	1.220	.901	.444	.159	.438	*	.471
JTIDS	.494	.123	.013	.185	N/A	*	.014
LANT(NAV)	.167	.042	.027	.016	.030	.005	.006
LANT(TAR)	.155	.099	.081	.060	.030	.014	.036
LANT(REC)	1.062	1.585	1.054	.654	*	*	.890
HELICOPTERS							
HH-52	3.0	2.9	.1	.3	.01	N/A	1.2
CH-46	5976.7	1218.9	1216.0	2709.0	1067.0	1792.0	2075.0
H-53	179.1	177.4	121.0	141.0	74.0	16.0	92.0
CH-47	11714.8	5154.1	4513.0	7158.0	3543.0	5670.0	8860.0
H-54	226.7	125.5	125.0	70.0	*	*	65.0
HH-60D	15.4	2.1	*	*	*	*	*
SH-3	402.6	289.9	285.0	200.0	189.0	121.0	239.0
ARMAMENT							
LLLGB	7.6	7.4	7.4	5.8	N/A	N/A	7.1
CEM	851	647	361	172	N/A	N/A	508
GBU-15	246	148	120	74	50	21	102
MISSILES							
AMRAAM	1764	1658	1425	1635	1362	N/A	1385
HARM	2088	399	364	760	241	N/A	884
IIR	6291	3385	3347	3898	N/A	N/A	4088
AIM7F(R)	386	250	156	339	91	N/A	135
AIM7F(GD)	87	85	73	74	83	N/A	84

An analysis of Table 6 indicated the following:

- All of the formulations yielded better results than the LC formulation for almost every weapon system. This fact indicates that the inclusion of the production rate (Y), or the production ratio (R or M), or both helped to explain more of the variability in costs than quantity (X) alone was capable of explaining.

- It was impossible to estimate the parameters of Mod Alt 1 and Mod Alt 2 in a number of cases due to a loss of degrees of freedom. These two models have the largest number of parameters, and estimates cannot be obtained when the data set contains fewer observations than the number of parameters to be estimated.

- Mod Alt 1 and Mod Alt 2 also produced a large number of cases in which the equation did not converge within 100 iterations or the parameter estimates were in excess of the SAS procedure capability. Note that in Modified Alt 2, no results were calculated at all for any missile programs.

- Bolton's two alternatives performed better than the TASC formulation in every case. However, at least one modified alternative was able to perform better than either of Bolton's two formulations in 27 of 37 cases. Mod Alt 2 performed better in more cases than any other alternative, with Mod Alt 1 following close behind. Mod Alt 1 and Mod Alt 2 together performed better than any other alternative in over half the cases. In a comparison of Bolton's two alternatives and the three modified alternatives, the results for the number of times that a particular formulation yielded the lowest residual sum of squares value was:

Alt 1	-	4 times
Alt 2	-	6 times
Mod Alt 1	-	10 times
Mod Alt 2	-	12 times
Mod Alt 3	-	5 times

These results do not include the B-52, F-102, F-106, and the HH-60D programs since parameter estimates could not be generated for these programs for any of the alternative formulations.

- Mod Alt 1 is a modification of the TASC formulation, and in every case where the two alternatives could be compared, Mod Alt 1 produced a small sum of squares.

- Mod Alt 2 is an expansion of Bolton's Alt 2. Therefore, Mod Alt 2 should produce a smaller sum of squares. The magnitude of the reduction in the sum of squares could not be evaluated for statistical significance. Nevertheless, in almost all cases where the two alternatives could be compared, the reduction in the sum of squares was in excess of 50%. Adding the production ratio to Bolton's Alt 2 does appear to further explain the variability in the cost of weapon system.

- Mod Alt 3, substitutes production ratio for production rate in Bolton's Alt 2. It is interesting to note that while Mod Alt 3 produced the smallest sum of squares in only five cases, this modification produced a smaller sum of squares than Bolton's Alt 2 in 15 cases where the two alternatives could be compared. It appears that in many cases, production ratio has a greater impact on costs than production rate.

- In a head to head comparison between the two most successful alternatives, Mod Alt 1 and Mod Alt 2, the results were almost equal. However, in seven of the ten cases where Mod Alt 1 provided the smallest sum of squares, the parameters of Mod Alt 2 could not be estimated. Modified Alt 1 performed better for helicopter and missile programs. Modified Alt 2 performed better for bomber, electronic, and armament programs. The two formulations were tied in the fighter category. Interestingly, these results are very similar to Bolton's findings (5:42). These patterns may be the result of some inherent characteristic of the production process for these systems, or it could be due to the differences in production policies followed for different groups of systems.

In view of these findings, there is no conclusive evidence that one superior formulation exists. Although the modified equations perform very well, a pattern exists within weapon system type that favors one formulation over the other. This pattern is consistent with Bolton's findings. If there is a sufficient basis for estimating the parameters of Mod Alt 2, it appears that this may be the better formulation since it incorporates both the production rate and the production ratio. If a reduced model is to be used, Mod Alt 1 appears to be the better choice. It appears that almost any alternative would be better than the current TASC formulation.

Every modified alternative formulation seemed to work well for some systems. Therefore, this thesis recommends that the AFSC production rate model should be modified to incorporate all three modified formulations. The user should have the ability to select from among the model formulations the best one that describes his/her particular program.

Research Objective Three

- The third objective is: (1) to investigate if statistical relationships exist for individual variables, (2) to determine which variables appear significant for different weapon systems, and (3) to identify any patterns that may exist in the occurrence of those variables.

The stepwise regression procedure outlined in Appendix B was used to identify the significant variables. In the stepwise regression procedure, variables are allowed to enter the regression equation if the partial F-test indicates that they are significant at the 85 percent level. Depending on the model specification, more than one variable was allowed to enter the regression equation. For a detailed discussion on the stepwise regression procedure, refer to the SAS Statistics Manual (13:214-220).

As noted earlier, the stepwise regression was performed on a log-linear transformation of non-linear equations. The complete SAS computer output for the stepwise regression for each formulation may be found in Appendix C.

The results displayed in Table 7 are a summary of the stepwise regression results and provide a breakout of variable occurrence frequency by model formulation. If a model formulation did not contain a particular variable in its equation, it is indicated by a dashed line. The variables in Table 7 are presented as they appear in the original formulations and not as log-linear transforms. The total eligible program line reflects the number of weapon systems out of a total of 41 programs in which that particular formulation yielded at least one significant variable.

TABLE 7

VARIABLE FREQUENCY BY FORMULATION
(In Number of Occurrences)

VARIABLE	ALT1	ALT2	MOD ALT1	MOD ALT2	MOD ALT3
X	29	31	27	32	34
Y	15	9	16	5	----
Y^2	----	8	----	7	----
R	8	----	6	8	8
R^2	----	----	6	5	3
Total Eligible Programs	38	37	38	38	35

It is apparent that the cumulative quantity (X) appeared as the most significant variable in every formulation. When Y and Y^2 are both present in a formulation, their frequency of occurrences are nearly equal, and the same is true for R and R^2. Y and Y^2 together occur more frequently in Alt 2 than R and R^2 together do in Mod Alt 3. Every variable appears to play some significant role in the formulation in which it occurs.

Table 8 provides a listing of the most significant variable combinations by model formulation. The variable combinations that are in bold italicized print indicate those combinations in a particular model formulation that yielded the lowest residual sum of squares results for that weapon system program. Although variables showed up significant for the B-52, F-102, F-106, and the HH-60D programs, no parameter estimates were generated for these programs (see Table 6). Therefore, no variables are italicized for those weapon systems. The "NONE" indicates that no variables met the entrance threshold, therefore yielding no significant variables.

TABLE 8

VARIABLE COMBINATIONS BY WEAPON SYSTEM

	ALT1	ALT2	MOD ALT1	MOD ALT2	MOD ALT3
BOMBERS					
B-1B	X Y	X	X Y	X	X
B-52	X	X	X	X	X
B-58	NONE	NONE	NONE	NONE	NONE
FIGHTERS					
A-10	Y	Y	Y	X	NONE
F-100	X	X	X	X	X
F-101	X	X	X	X	X
F-102	X	X Y Y^2	X Y R^2	X Y^2 R	X
F-106	X	X	X	X	X
F-15A/B	X	X	X	X	X
F-15C/D	Y R	Y_2	Y R	X_2 Y Y^2 R^2	R
F-15E	Y	Y^2	Y	Y^2	X
F-16A/B	X	X	R	R	X
F-16E	NONE	NONE	NONE	NONE	NONE
ELECTRONIC					
ARC-109V	Y	X	Y	X	X
ARC-54	X	X	X	X	X
ASN-63	NONE	NONE	NONE	NONE	NONE
ASN-70	Y	Y Y^2	Y	Y Y^2	NONE
ASN-99	Y R	X Y^2	Y R	X Y^2	X
ASN-108	X	X	X	X	X
ASQ-133	X	Y Y^2	X	X Y^2	X
ASW-32	X	X	X_2	X_2	X
CP-1035N	R	NONE	R^2	R^2	NONE
JTIDS	X R	X	X R	X R	X R
LTN(NAV)	X	X Y	X	X Y_2	X
LTN(TAR)	X Y R	X Y	X R^2	X R^2	X R^2
LTN(REC)	X	X	X	X	X
HELICOPTERS					
HH-52	X	X	R^2	R R^2	X
CH-46	X Y	X	X Y	X R	X R
H-53	X	X	X	X	X
CH-47	X Y	X Y Y^2	X Y	X Y Y^2	X R
H-54	X	X	X	X	X
HH-60D	X Y R	X	X Y R	X	X
SH-3	X	X	X	X	X
ARMAMENT					
LLLGB	X	X	X	X	X
CEM	Y	X Y_2 Y^2	Y R^2	X R_2	X R
GBU-15	Y	Y Y^2	Y	Y Y^2	X
MISSILES					
AMRAAM	X	X	X	X	X
HARM	X Y	X	X Y	X R R^2	X R R^2
IIR	X R	X	X Y R_2	X R R^2	X R R^2
AIM7F(R)	X Y	X	X Y R^2	X R	X
AIM7F(GD)	X R	X	X	X	X R

An analysis of Table 8 yielded the following results:

- In Alt 1, different variable combinations occurred in each weapon system group. Except for inclusion of the X variable in various combinations, no combination was dominant in any of the weapon system types.

- In Alt 2, the Y Y^2 combination occurred in almost every weapon system type. The only variable pattern occurred in the missile and helicopter program types in which the single X variable was almost exclusively dominant.

- In Mod Alt 1, different variable combination occurred in each weapon system group. The X Y combination occurred in almost every missile program.

- In Mod Alt 2, the Y Y^2 and R R^2 combinations occurred in different weapon system types. The only variable pattern occurred in the missile programs where the X R combination was rather dominant.

- In Mod Alt 3, two patterns were identified. For fighter, bomber, electronic and helicopter programs, the single X variable occurred almost exclusively. For missile programs, the X R combination was heavily favored.

In these findings, the missile program type seemed to be the only group which consistently yielded a distinct pattern of variable combinations for all model formulations. In general, no pattern existed for the other weapon system types across the different model formulations. Therefore, no guidelines were developed to explain why one alternative model performed better for certain weapon system types than other formulations.

Table 9 provides a summary of variable combinations by formulation. The table shows the number of times a particular variable combination turned up significant for each model formulation. The total multivariate line shows the total number of multivariate combinations that occurred in each formulation. The total eligible program line reflects the number of weapon systems out of a total of 41 programs in

which that particular formulation yielded at least one significant variable. The asterisk identifies those variable combinations that were not possible in that particular model formulation.

TABLE 9

VARIABLE COMBINATIONS BY FORMULATION

Combination	Alt 1	Alt 2	Mod Alt 1	Mod Alt2	Mod Alt 3
X	19	25	17	19	26
Y or Y^2	6	3	5	1	*
R or R^2	1	*	3	2	1
X Y	5	2	4	1	*
X Y^2	*	1	*	2	*
X R	3	*	1	4	5
X R^2	*	*	1	1	1
Y R	2	*	2	0	*
Y R^2	*	*	1	0	*
Y Y^2	*	3	*	2	*
R R^2	*	*	0	1	0
X Y R	2	*	2	0	*
X Y^2 R	*	*	*	1	*
X Y R^2	*	*	2	0	*
X Y Y^2	*	3	*	1	*
X R R^2	*	*	0	2	2
X Y Y^2 R^2	*	*	*	1	*
Total Multivariate Combinations	12	9	13	16	8
Total Eligible Programs	38	37	38	38	35

Analysis of Table 9 showed that multivariate combinations accounted for less than half of the total eligible programs in each formulation. Not surprisingly, the most multivariate combinations occurred in the formulations with a large number of parameters in their equations. Surprisingly, the single X variable combination was the dominant form in all of the model formulations. This means that all model formulations essentially reverted back to a model structure in which cumulative

quantity (X) was the only significant term. In some cases, this structure was the basic learning curve formulation. However, the results did indicate that the presence of the other variables did enable the formulation to explain more of the variability in cost.

Also, each model formulation seemed to favor either production rate (Y) or production ratio (R) in those equations where both variables were present. Alt 1 and Mod Alt 1 favored production rate while Mod Alt 2 and Mod Alt 3 preferred production ratio.

The results in Table 10 provide a summary of the frequency of occurrence for each variable combination that yielded the lowest residual sum of squares result. Interestingly, certain significant variable combinations yielded the best results in different model formulations.

TABLE 10

LOWEST SUM OF THE SQUARED RESIDUAL VALUE BY VARIABLE COMBINATION
(In Number of Occurrences)

VARIABLE COMBINATION	# OF OCCURRENCES
X	17
Y_2	1
Y^2	1
R_2	0
R^2	1
X Y_2	4
X Y^2	1
X R_2	3
X R^2	1
Y Y^2	2
R R^2	0
X Y Y^2	1
X Y R^2	1
X Y Y^2 R^2	1
NONE	3
Total Eligible Programs	37

Analysis of Table 10 provided insight into those combinations that not only occurred frequently, but also gave the lowest residual sum of squares results. This seemed to put the analysis into a more meaningful perspective. Table 10 showed that the single X variable combination not only occurred the most times, but also yielded the most "lowest residual sum of squares" results. Interestingly, different model formulations incorporating this variable make up 17 occurrences out of the 37 programs.

In addition, analysis of the quadratic terms that allowed calculation of either the optimal rate or ratio of production yielded a surprising result. It seems that solving for the optimal rate of production is important as the Y Y^2 combination yielded the best results twice. On the other hand, the R R^2 combination never yielded the lowest residual sum of squares result. Therefore, it seems that solving for the optimal ratio of production was less important than solving for the optimal rate of production. Interestingly, three programs had the lowest residual sum of squares where no variables turned up significant.

In conclusion, the results of this objective show that the cumulative quantity variable (X) is extremely significant in explaining the variability of weapon system costs. Also, inclusion of either production rate (Y) or production ratio (R), while not always significant, combined with X to yield results that were superior to the basic learning curve. Finally, the findings show that solving for the optimal rate of production is indeed worthwhile and that formulations that incorporate this approach should be included in the Production Rate Model.

V. Conclusion

The cost estimating profession's need for tools that generate credible production estimates in today's dynamic acquisition environment requires a constant search for better methods and procedures. The AFSC Production Rate Model's effort to capture rapid changes in production rates or buy quantities is a step in that direction. Refinement of the Production Rate Model to improve its performance was the objective of this thesis effort.

Summary of Results

This thesis showed that as a result of the formulations developed by TASC and Bolton, the inclusion of production rate and production ratio yielded results which were significant from a statistical and logical viewpoint. Furthermore, the effort to refine the AFSC Production Rate Model has succeeded.

Three modified formulations were developed in this effort. The TASC and Bolton formulations were modified to include quadratic expressions incorporating production rate and/or production ratio in the equations. The Modified Alt 1 equation took the production ratio variable and made it a quadratic function of the production rate in the TASC formulation. The Modified Alt 2 equation added a quadratic function to solve for the optimal ratio of production in addition to the optimal rate of production in Bolton's Alt 2 formulation. The Modified Alt 3 formulation took the Bolton Alt 2 model structure and substituted production ratio for production rate. Based on the residual sum of

squares comparison, these three modified formulations outperformed TASC's and Bolton's original models.

Unfortunately, there was no conclusive evidence to support the existence of a superior formulation. Although the three modified equations performed very well, some limitations on their potential use were discussed. These included non-calculation of the model parameters due to a loss of degrees of freedom and non-convergence of the unknown model parameters within the specified number of iterations. The limitations precluded recommending any modified alternative as a singular replacement formulation for all programs, even though their performance in reducing the residual sum of squares was outstanding.

The Modified Alt 2 formulation turned out to be the best performer, although it suffered from the limitations discussed in the previous section. Although the Modified Alt 3 formulation did not consistently perform better than the Modified Alt 1 or Modified Alt 2 formulation, in direct comparison it did not suffer from the same limitations. Compared with Bolton's Alt 1 and Alt 2, however, Mod Alt 3 yielded slightly better results. All three modified formulations surpassed the basic learning curve and TASC formulation in performance.

In addition, the findings of research objective three showed that solving for the optimal ratio of production was not as significant as originally thought. The findings did indicate, however, that the inclusion of cumulative quantity (X) and either production rate (Y) or production ratio (R), while not always significant, yielded results that were superior to the basic learning curve and the TASC formulation. The findings showed that solving for the optimal rate of production was

statistically meaningful and that the bathtub curve was a valid and logical concept.

Therefore, it was recommended that the three modified alternative formulations be incorporated into the AFSC Production Rate model instead of the TASC model formulation. The user should be given the option to determine the formulation that best fits his/her weapon system program.

Research Limitations

The research in this thesis was subject to several limitations. First, due to the non-linear procedure, statistical tests which are normally used to determine model specification and measurement were not applicable. Therefore, the ability to test parameter significance or model fit was extremely difficult. However, the findings obtained in the log-linear analysis supported the logic behind the model concept, so the results obtained in this research should be valid.

Second, the empirical relationship between production rate and production ratio was not investigated. The results appear to be reasonable based on a mere residual sum of squares comparison and the use of annual buy schedules as a proxy for production rate as done in Bolton's thesis. However, because a sensitivity analysis, the model's stability or performance using different evaluation criteria or some other measure of production rate (besides the proxy "annual buy quantity" used in this evaluation) may yield different results.

Third, since the exact empirical relationships between production rate and production ratio were not found, the value for either the optimal rate of production or optimal ratio of production was not

calculated. If this relationship can be empirically determined, tables for the various parameters according to the optimal values may be developed.

Finally, as Bolton states, "the research is limited in that the effects of production rate changes still cannot be separated from the effects of learning because of collinearity in the data" (3:45). Although the non-linear regression technique reduces the effects of multicollinearity, they do not eliminate the problem.

Recommendations for Future Research

Obviously, the recommendations for future research begin with investigating the research limitations encountered in this effort. Therefore, the first area of research is to determine the sensitivity of the recommended modified formulations. The relationship between production rate and production ratio has a definite influence on the model's ability to predict cost. Performing a sensitivity analysis by varying the input variables according to different scales or measures would enable one to determine the stability of the recommended formulation. In any case, the stability or instability of the modified alternative formulations may or may not change the recommendations made in this thesis.

The second area of research would be to refine the TASC data base by including actual contract data where applicable and updating the budgetary estimates for current on-going programs. The modified formulations' predictive ability could be tested by taking the refined data base and analyzing it with the SAS programs developed for each

modified formulation. Successful results would help to validate the models being recommended in this thesis.

Finally, further investigation of weapon system cost behavior due to the effect of changes in production rate should be attempted by future researchers. Other factors which influence production rate should be empirically defined and incorporated in model formulations to further refine the Production Rate Model. Each advancement in the cost estimating profession allows the development of new concepts and techniques that refine the methodology used to estimate weapon system production costs.

Appendix A: TASC Data Set

The data used in this thesis was extracted from the AFSC Production Rate Model Data Handbook (15). As discussed in chapter three, rule of thumb lot plot point (LPP) values for each program were calculated and included in the data set. The lot plot points were generated according to the following criteria:

For Lot 1 Only:
If Lot Quantity $\geq$ 10, LPP = Lot Quantity / 3.
Otherwise LPP = Lot Quantity / 2.

For all subsequent Lots:
LPP = Lot Quantity / 2.

The data set is provided in the following tables:

A.1 - Bomber Aircraft Programs

Table A.1.1

B-1B Cost/Quantity Data

Fiscal Year	Lot	Quantity	Recurring Unit Cost	LPP
1982	1	1	535.8	.5
1983	2	7	260.3	4.5
1984	3	10	200.5	13.0
1985	4	34	142.0	35.0
1986	5	48	111.3	76.0

Table A.1.2

B-52 Cost/Quantity Data

Fiscal Year	Lot	Quantity	Recurring Unit Cost	LPP
1952	1	20	112.5	6.67
1953	2	43	37.0	41.50
1954	3	25	28.6	75.50
1955	4	77	32.3	126.50
1956	5	133	23.4	231.50
1957	6	202	28.4	399.00
1958	7	101	27.3	550.50
1959	8	39	27.3	620.50
1960	9	62	35.4	671.00
1961	10	40	35.0	722.00

Table A.1.3

B-58 Cost/Quantity Data

Fiscal Year	Lot	Quantity	Recurring Unit Cost	LPP
1958	1	17	93.86	5.67
1959	2	36	80.26	35.00
1960	3	20	73.16	63.00
1961	4	30	36.56	88.00

A.2 - Fighter Aircraft Programs

Table A.2.1

A-10 Cost/Quantity Data

Fiscal Year	Lot	Quantity	Recurring Unit Cost	LPP
1975	1	22	12.37	7.33
1976	2	53	9.16	48.50
197T	3	20	8.2	85.00
1977	4	100	8.2	145.00
1978	5	144	7.82	267.00
1979	6	144	7.59	411.00
1980	7	144	7.82	555.00
1981	8	60	10.18	657.00
1982	9	20	13.64	697.00

Table A.2.2

F-100 Cost/Quantity Data

Fiscal Year	Lot	Quantity	Recurring Unit Cost	LPP
1952	1	23	6.51	7.67
1953	2	545	3.45	295.50
1954	3	593	3.08	864.50
1955	4	559	3.10	1440.50
1956	5	557	2.50	1998.50

Table A.2.3

F-101 Cost/Quantity Data

Fiscal Year	Lot	Quantity	Recurring Unit Cost	LPP
1954	1	31	16.85	10.33
1955	2	84	7.58	73.00
1956	3	309	6.91	269.50
1957	4	206	5.76	527.00
1958	5	84	5.27	672.00
1959	6	93	5.22	760.50

Table A.2.4

F-102 Cost/Quantity Data

Fiscal Year	Lot	Quantity	Recurring Unit Cost	LPP
1954	1	37	11.66	12.33
1955	2	108	5.17	91.00
1956	3	562	3.5	426.00
1957	4	140	2.21	777.00

Table A.2.5

F-106 Cost/Quantity Data

Fiscal Year	Lot	Quantity	Recurring Unit Cost	LPP
1956	1	42	34.19	14.0
1957	2	88	10.54	86.0
1958	3	45	11.64	152.5
1959	4	165	7.59	257.5

Table A.2.6

F-15A/B Cost/Quantity Data

Fiscal Year	Lot	Quantity	Recurring Unit Cost	LPP
1973	1	30	25.597	10
1974	2	62	19.556	61
1975	3	72	17.183	128
1976	4	108	17.126	218
197T	5	24	16.021	284
1977	6	108	16.272	350

Table A.2.7

F-15C/D Cost/Quantity Data

Fiscal Year	Lot	Quantity	Recurring Unit Cost	LPP
1978	1	97	17.249	32.33
1979	2	78	15.588	136.00
1980	3	60	15.508	205.00
1981	4	42	17.665	256.00
1982	5	36	19.943	295.00
1983	6	39	19.308	332.50
1984	7	36	21.954	370.00
1985	8	48	21.017	412.00

Table A.2.8

F-15E Cost/Quantity Data

Fiscal Year	Lot	Quantity	Recurring Unit Cost	LPP
1986	1	60	20.544	20
1987	2	72	19.203	96
1988	3	96	17.608	180
1989	4	96	16.175	276
1990	5	96	16.041	372
1991	6	96	17.927	468

Table A.2.9

F-16A/B Cost/Quantity Data

Fiscal Year	Lot	Quantity	Recurring Unit Cost	LPP
1978	1	105	10.14	35.0
1979	2	145	7.74	177.5
1980	3	175	8.04	337.5
1981	4	180	5.05	515.0
1982	5	120	5.13	665.0

Table A.2.10

F-16E Cost/Quantity Data

Fiscal Year	Lot	Quantity	Recurring Unit Cost	LPP
1983	1	120	9.86	40
1984	2	144	10.58	192
1985	3	150	14.55	339
1986	4	216	11.93	522
1987	5	216	11.28	738
1988	6	216	11.02	954
1989	7	216	10.88	1170
1990	8	216	10.69	1386
1991	9	216	10.61	1602
1992	10	216	10.54	1818

A.3 - Electronics Programs

Table A.3.1

ARC-109V Cost/Quantity Data

Fiscal Year	Lot	Quantity	Recurring Unit Cost	LPP
1972	1	4	.0487	2.0
1973	2	24	.0393	16.0
1974	3	79	.0285	67.5
1975	4	226	.0313	220.0
1976	5	108	.0303	387.0

Table A.3.2

ARC-54 Cost/Quantity Data

Fiscal Year	Lot	Quantity	Recurring Unit Cost	LPP
1964	1	900	.0210	300.0
1964	2	853	.0165	1326.5
1965	3	1381	.0164	2443.5
1966	4	1160	.0145	3714.0
1966	5	300	.0144	4444.0
1966	6	3103	.0139	6145.5
1966	7	2650	.0143	9022.0

Table A.3.3

ASN-63 Cost/Quantity Data

Fiscal Year	Lot	Quantity	Recurring Unit Cost	LPP
1966	1	781	.1866	260.33
1967	2	149	.1744	855.50
1968	3	287	.1769	1073.50
1969	4	141	.1817	1287.50
1970	5	92	.1772	1404.00
1971	6	135	.2189	1517.50
1972	7	108	.1911	1639.00
1973	8	158	.1917	1772.00
1974	9	36	.2005	1869.00
1975	10	36	.2145	1905.00

Table A.3.4

ASN-70 Cost/Quantity Data

Fiscal Year	Lot	Quantity	Recurring Unit Cost	LPP
1966	1	152	.0350	50.67
1967	2	250	.0353	277.00
1968	3	81	.0342	442.50
1969	4	58	.0356	512.00
1970	5	26	.0370	554.00
1971	6	8	.0399	571.00
1972	7	8	.0370	579.00
1973	8	11	.0427	588.50

Table A.3.5

ASN-99 Cost/Quantity Data

Fiscal Year	Lot	Quantity	Recurring Unit Cost	LPP
1968	1	157	.0464	52.33
1969	2	196	.0404	255.00
1970	3	185	.0413	445.50
1971	4	243	.0433	659.50
1972	5	24	.0570	793.00
1973	6	72	.0624	841.00
1974	7	56	.0635	905.00
1975	8	117	.0684	991.50

Table A.3.6

CP-1035N Cost/Quantity Data

Fiscal Year	Lot	Quantity	Recurring Unit Cost	LPP
1970	1	12	.1248	4
1971	2	26	.0903	25
1972	3	48	.1236	62
1973	4	48	.1287	110
1974	5	50	.1310	159
1975	6	80	.1154	224

Table A.3.7

LANTIRN (Nav Pod) Cost/Quantity Data

Fiscal Year	Lot	Quantity	Recurring Unit Cost	LPP
1985	1	4	1.75	2
1986	2	34	1.3199	21
1987	3	138	1.0761	107
1988	4	144	.9679	248
1989	5	144	.9184	392
1990	6	144	.8854	536
1991	7	116	.8643	666

Table A.3.8

LANTIRN (Target Pod) Cost/Quantity Data

Fiscal Year	Lot	Quantity	Recurring Unit Cost	LPP
1985	1	4	1.4375	2
1986	2	34	1.1286	21
1987	3	128	.9375	102
1988	4	144	.8490	238
1989	5	144	.8081	382
1990	6	144	.7795	526
1991	7	116	.7619	656

Table A.3.9

LANTIRN (Target Recognizer) Cost/Quantity Data

Fiscal Year	Lot	Quantity	Recurring Unit Cost	LPP
1988	1	79	.4383	26.33
1989	2	192	.3353	175.00
1990	3	192	.2975	367.00
1991	4	192	.2865	559.00
1992	5	65	.2693	687.50

Table A.3.10

ASQ-133 Cost/Quantity Data

Fiscal Year	Lot	Quantity	Recurring Unit Cost	LPP
1970	1	14	.5856	4.67
1971	2	19	.5862	23.50
1972	3	68	.4255	67.00
1973	4	67	.3828	134.50
1974	5	81	.3535	208.50
1975	6	58	.3355	278.00

Table A.3.11

ASN-108 Cost/Quantity Data

Fiscal Year	Lot	Quantity	Recurring Unit Cost	LPP
1972	1	8	.1373	4.0
1973	2	31	.1048	23.5
1974	3	77	.0874	77.5
1975	4	216	.0943	224.0
1976	5	108	.0872	386.0

Table A.3.12

ASW-32 Cost/Quantity Data

Fiscal Year	Lot	Quantity	Recurring Unit Cost	LPP
1970	1	12	.2338	4
1971	2	26	.1643	25
1972	3	48	.1524	62
1973	4	48	.0974	110
1974	5	50	.1441	159
1975	6	80	.1518	224

Table A.3.13

JTIDS Cost/Quantity Data

Fiscal Year	Lot	Quantity	Recurring Unit Cost	LPP
1986	1	45	.4068	15.0
1987	2	76	.2764	83.0
1988	3	77	.2466	159.5
1989	4	72	.2308	234.0
1990	5	57	.2205	298.5

A.4 - Helicopter Programs

Table A.4.1

HH-52 Cost/Quantity Data

Fiscal Year	Lot	Quantity	Recurring Unit Cost	LPP
1963	1	28	1.577	9.33
1964	2	15	1.104	35.50
1965	3	17	1.085	51.50
1966	4	15	1.012	67.50
1967	5	12	1.041	81.00
1968	6	12	1.055	93.00

Table A.4.2

CH-46 Cost/Quantity Data

Fiscal Year	Lot	Quantity	Recurring Unit Cost	LPP
1965	1	14	7.541	4.67
1966	2	36	3.898	32.00
1967	3	60	2.766	80.00
1968	4	85	2.419	152.50
1969	5	199	1.986	294.50
1970	6	92	2.236	440.00
1971	7	90	2.370	531.00
1972	8	48	2.547	600.00

Table A.4.3

H-53 Cost/Quantity Data

Fiscal Year	Lot	Quantity	Recurring Unit Cost	LPP
1965	1	10	6.752	3.33
1966	2	131	4.264	75.50
1967	3	140	3.762	211.00
1968	4	12	3.382	287.00
1969	5	30	3.341	308.00
1970	6	8	3.154	327.00
1971	7	30	3.685	346.00
1972	8	6	3.947	364.00

Table A.4.4

CH-47 Cost/Quantity Data

Fiscal Year	Lot	Quantity	Recurring Unit Cost	LPP
1962	1	18	6.181	6.0
1963	2	24	5.226	30.0
1964	3	24	4.559	54.0
1965	4	60	3.459	96.0
1966	5	72	2.760	162.0
1967	6	160	2.307	278.0
1968	7	84	2.313	400.0
1969	8	143	2.695	513.5
1970	9	45	3.463	607.5
1971	10	36	3.085	648.0
1972	11	12	3.671	672.0
1973	12	12	3.852	684.0

Table A.4.5

H-54 Cost/Quantity Data

Fiscal Year	Lot	Quantity	Recurring Unit Cost	LPP
1964	1	6	5.248	3.0
1967	2	24	3.388	18.0
1968	3	30	2.801	45.0
1969	4	23	3.402	71.5
1970	5	6	3.083	86.0

Table A.4.6

HH-60D Cost/Quantity Data

Fiscal Year	Lot	Quantity	Recurring Unit Cost	LPP
1986	1	3	9.2	1.5
1987	2	25	7.1	15.5
1988	3	35	6.7	45.0
1989	4	29	6.6	77.5

Table A.4.7

SH-3 Cost/Quantity Data

Fiscal Year	Lot	Quantity	Recurring Unit Cost	LPP
1960	1	20	3.327	6.67
1961	2	49	2.480	44.50
1962	3	71	2.319	104.50
1963	4	45	1.811	162.50
1964	5	36	1.870	203.00
1965	6	36	1.589	239.00
1966	7	30	1.703	272.00
1967	8	48	1.930	311.00
1970	9	15	2.144	342.50

A.5 - Tactical Armament Programs

Table A.5.1

Low Level Laser Guided Bomb (LLLGB) Cost/Quantity Data

Fiscal Year	Lot	Quantity	Recurring Unit Cost	LPP
1983	1	1600	.0275	533.33
1984	2	2950	.0206	3075.00
1985	3	3740	.0189	6420.00
1986	4	8980	.0162	12780.00
1987	5	9620	.0147	22080.00
1988	6	14400	.0137	34090.00
1989	7	15600	.0129	49090.00
1990	8	15600	.0123	64690.00
1991	9	15600	.0118	80290.00
1992	10	11910	.0115	94045.00

Table A.5.2

Combined Effect Munitions (CEM) Cost/Quantity Data

Fiscal Year	Lot	Quantity	Recurring Unit Cost	LPP
1983	1	172	.06924	57.33
1984	2	1260	.03038	802.00
1985	3	6125	.01988	4494.50
1986	4	14220	.01765	14667.00
1987	5	28450	.01619	36002.00
1988	6	35020	.01401	67737.00
1989	7	48910	.01258	109702.00
1990	8	37509	.01181	152911.50

Table A.5.3

GBU-15 Cost/Quantity Data

Fiscal Year	Lot	Quantity	Recurring Unit Cost	LPP
1980	1	40	.1975	13.33
1981	2	65	.2000	72.50
1982	3	340	.1439	275.00
1983	4	250	.1483	570.00
1984	5	320	.1308	855.00
1985	6	600	.1718	1315.00
1986	7	600	.1539	1915.00
1987	8	600	.1483	2515.00
1988	9	600	.1420	3115.00

A.6 - Tactical Missile Programs

Table A.6.1

AMRAAM Cost/Quantity Data

Fiscal Year	Lot	Quantity	Recurring Unit Cost	LPP
1985	1	194	1.233	64.67
1986	2	1057	.512	722.50
1987	3	1964	.342	2233.00
1988	4	2996	.257	4713.00
1989	5	2900	.232	7661.00
1990	6	2900	.194	10561.00
1991	7	2900	.182	13461.00
1992	8	3000	.170	16411.00
1993	9	3000	.158	19411.00
1994	10	3763	.155	22792.50

Table A.6.2

HARM Cost/Quantity Data

Fiscal Year	Lot	Quantity	Recurring Unit Cost	LPP
1981	1	80	.809	26.67
1982	2	236	.517	198.00
1983	3	396	.400	514.00
1984	4	687	.314	1055.50
1985	5	1745	.249	2271.50
1986	6	2468	.223	4378.00
1987	7	2119	.208	6671.50
1988	8	2132	.197	8797.00
1989	9	3000	.184	11363.00
1990	10	3000	.177	14363.00
1991	11	1098	.196	16412.00

Table A.6.3

IIR Maverick Cost/Quantity Data

Fiscal Year	Lot	Quantity	Recurring Unit Cost	LPP
1982	1	200	.309	66.66
1983	2	900	.135	650.00
1984	3	2600	.083	2400.00
1985	4	5729	.082	6564.50
1986	5	9000	.062	13929.00
1987	6	12000	.057	24429.00
1988	7	12000	.055	36429.00
1989	8	12000	.053	48429.00
1990	9	6235	.057	57546.50

Table A.6.4

AIM-7F (Raytheon) Cost/Quantity Data

Fiscal Year	Lot	Quantity	Recurring Unit Cost	LPP
1972	1	100	.741	33.33
1973	2	225	.378	212.50
1975	3	600	.199	625.00
1976	4	800	.169	1325.00
1977	5	1100	.134	2075.00
1978	6	1400	.116	3525.00
1979	7	900	.111	4675.00
1980	8	1144	.095	5697.00

Table A.6.5

AIM-7F (General Dynamics) Cost/Quantity Data

Fiscal Year	Lot	Quantity	Recurring Unit Cost	LPP
1975	1	15	1.551	5
1976	2	70	.379	50
1977	3	210	.228	190
1978	4	210	.195	400
1979	5	750	.130	880
1980	6	1310	.090	1910

Appendix B: SAS Computer Programs

This section provides the SAS programs used to run the stepwise regression procedure and the non-linear regression procedure. For a detailed description of specific program steps, consult the SAS User's Guide: Statistics (SAS) (13).

B.1 - Alt 1 Stepwise Regression

This program was used to run the stepwise regression procedure for the Alt 1 formulation.

```
OPTIONS LINESIZE = 80;
DATA INPM;
  INFILE INPM;
INPUT SYS $ LOT QTY AUC MID;
  RATE = QTY;
  RATIO = (QTY/LAG1(QTY));
    IF LOT = 1 THEN RATIO = 1;
  YT = LOG(AUC);
  Z1 = LOG(MID);
  Z2 = LOG(RATE);
  Z3 = LOG(RATIO);
PROC SORT DATA = INPM;
  BY SYS;
PROC STEPWISE;
  BY SYS;
MODEL YT = Z1 Z2 Z3/DETAILS;
```

B.2 - Alt 2 Stepwise Regression

This program was used to run the stepwise regression procedure for the Alt 2 formulation.

```
OPTIONS LINESIZE = 80;
DATA INPM;
  INFILE INPM;
INPUT SYS $ LOT QTY AUC MID;
  RATE = QTY;
  RATIO = (QTY/LAG1(QTY));
    IF LOT = 1 THEN RATIO = 1;
  YT = LOG(AUC);
  Z1 = LOG(MID);
```

```
  Z2 = RATE * LOG(MID);
  Z3 = RATE**2 * LOG(MID);
PROC SORT DATA = INPM;
  BY SYS;
PROC STEPWISE;
  BY SYS;
MODEL YT = Z1 Z2 Z3/DETAILS;
```

B.3 - Modified Alt 1 Stepwise Regression

This program was used to run the stepwise regression procedure for the Modified Alt 1 formulation.

```
OPTIONS LINESIZE = 80;
DATA INPM;
  INFILE INPM;
INPUT SYS $ LOT QTY AUC MID;
  RATE = QTY;
  RATIO = (QTY/LAG1(QTY)) - 1;
    IF LOT = 1 THEN RATIO = 1;
  YT = LOG(AUC);
  Z1 = LOG(MID);
  Z2 = LOG(QTY);
  Z3 = RATIO * Z2;
  Z4 = RATIO**2 * Z2;
PROC SORT DATA = INPM;
  BY SYS;
PROC STEPWISE;
  BY SYS;
MODEL YT = Z1 Z2 Z3 Z4/DETAILS;
```

B.4 - Modified Alt 2 Stepwise Regression

This program was used to run the stepwise regression procedure for the Modified Alt 2 formulation.

```
OPTIONS LINESIZE = 80;
DATA INPM;
  INFILE INPM;
INPUT SYS $ LOT QTY AUC MID;
  RATE = QTY;
  RATIO = (QTY/LAG1(QTY)) - 1;
    IF LOT=1 THEN RATIO = 1;
  YT = LOG(AUC);
  Z1 = LOG(MID);
  Z2 = RATE * Z1;
  Z3 = RATE**2 * Z1;
  Z4 = RATIO * Z1;
```

```
  Z5 = RATIO**2 * Z1;
PROC SORT DATA = INPM;
  BY SYS;
PROC STEPWISE;
  BY SYS;
MODEL YT = Z1 Z2 Z3 Z4 Z5/DETAILS;
```

B.5 - Modified Alt 3 Stepwise Regression

This program was used to run the stepwise regression procedure for the Modified Alt 3 formulation.

```
OPTIONS LINESIZE = 80;
DATA INPM;
  INFILE INPM;
INPUT SYS $ LOT QTY AUC MID;
  RATE = QTY;
  RATIO = (QTY/LAG1(QTY));
IF LOT = 1 THEN RATIO = 1;
  YT = LOG(AUC);
  Z1 = LOG(MID);
  Z2 = RATIO * Z1;
  Z3 = RATIO**2 * Z1;
PROC SORT DATA = INPM;
  BY SYS;
PROC STEPWISE;
  BY SYS;
MODEL YT = Z1 Z2 Z3 /DETAILS;
```

B.6 Modified Alt 1 Non-linear Regression

This program was used to run the non-linear regression procedure for the Modified Alt 1 formulation.

```
OPTIONS LINESIZE = 80;
DATA INP;
  INFILE INP;
INPUT SYS $ LOT QTY AUC;
RETAIN XL 0 XU 0;
    IF LOT = 1 THEN XU = 0;
    IF LOT > 0 THEN XU + QTY;
      XL = XU - QTY;
    IF LOT = 1 THEN XL = .0000001;
      R = (QTY/LAG1(QTY));
    IF LOT = 1 THEN R = 1;
      YI = QTY;
      TCA = QTY*AUC;
PROC SORT DATA = INP;
```

```
  BY SYS;
PROC NLIN DATA = INP
  METHOD = MARQUARDT
  MAXITER = 100
  CONVERGE = .00000000000000001;
  PARMS A = 1
        B = 0
        C = 0
        D = 0
        E = 0;
  F1 = (C + (D*R) + (E*R**2) + 1);
  F2 = (XU**(B+1)) - (XL**(B+1));
MODEL TCA = ((A*YI**F1)/(B+1))*F2;
  DER.A = ((YI**F1)/(B+1))*F2;
  DER.B = ((XU**(B+1)*LOG(XU)) - (XL**(B+1)*LOG(XL)))*A*YI**F1/(B+1) -
          ((A*YI**F1*(XU**(B+1) - XL**(B+1)))/(B+1)**2);
  DER.C = (A*YI**F1*LOG(YI)/(B+1))*(XU**(B+1) - XL**(B+1));
  DER.D = (A*YI**F1*LOG(YI)*R/(B+1))*(XU**(B+1) - XL**(B+1));
  DER.E = ((A*YI**F1*LOG(YI)*R**2)/(B+1))*(XU**(B+1) - XL**(B+1));
BY SYS;
  OUTPUT OUT = NOUT
  PARMS = A0 B0 C0 DO E0
  PREDICTED = TCP
  RESIDUAL = RES;
  DATA OUT2;
  SET NOUT;
    UCP = TCP/QTY;
    DIF = AUC - UCP;
    PCT = 100 * DIF/AUC;
PROC PRINT DATA =OUT2;
  VAR LOT XL XU YI R AUC UCP DIF PCT ;
  BY SYS;
```

B.7 - Modified Alt 2 Non-linear Regression

This program was used to run the non-linear regression procedure for the Modified Alt 2 formulation.

```
OPTIONS LINESIZE = 80;
DATA INP;
  INFILE INP;
INPUT SYS $ LOT QTY AUC;
RETAIN XL 0 XU 0 VI 0;
    IF LOT = 1 THEN XU = 0;
    IF LOT > 0 THEN XU + QTY;
      YI = QTY;
      XL =XU - QTY;
    IF LOT = 1 THEN XL = .0000001;
      R = (QTY/LAG1(QTY)) - 1;
    IF LOT = 1 THEN R = 1;
```

```
      TCA = QTY*AUC;
PROC SORT DATA = INP;
  BY SYS;
PROC NLIN DATA = INP
  METHOD = MARQUARDT
  MAXITER = 100
  CONVERGE = .00000000000000001;
  PARMS A = 1
        B = 0
        C = 0
        D = 0
        E = 0
        F = 0;
  F1 = (B + (C*R) + (E*YI) + (F*YI**2) + (D*R**2) + 1);
  F2 = (XU**F1-XL**F1);
MODEL TCA= (A/F1)*F2;
  DER.A = (1/F1)*F2;
  DER.B = ((A/F1)*XU**F1*LOG(XU)) - ((A/F1**2)*XU**F1) -
          ((A/F1)*XL**F1*LOG(XL)) + ((A/F1**2)*XL**F1);
  DER.C = ((A/F1)*XU**F1*LOG(XU)*R) - ((A/F1**2)*XU**F1*R) -
          ((A/F1)*XL**F1*LOG(XL)*R) + ((A/F1**2)*XL**F1*R);
  DER.D=  ((A/F1)*XU**F1*LOG(XU)*R**2) - ((A/F1**2)*R**2*XU**F1) -
          ((A/F1)*XL**F1*LOG(XL)*R**2) + ((A/F1**2)*R**2*XL**F1);
  DER.E = ((A/F1)*XU**F1*LOG(XU)*YI) - ((A/F1**2)*XU**F1*YI) -
          ((A/F1)*XL**F1*LOG(XL)*YI) + ((A/F1**2)*XL**F1*YI);
  DER.F = ((A/F1)*XU**F1*LOG(XU)*YI**2) - ((A/F1**2)*XU**F1*YI**2) -
          ((A/F1)*XL**F1*LOG(XL)*YI**2) + ((A/F1**2)*XL**F1*YI**2);
  BY SYS;
    OUTPUT OUT = NOUT
    PARMS = A0 B0 C0 D0 E0 F0
    PREDICTED = TCP
    RESIDUAL = RES;
    DATA OUT2;
    SET NOUT;
      UCP = TCP/QTY;
      DIF = AUC - UCP;
      PCT = 100 * DIF/AUC;
PROC PRINT DATA = OUT2;
  VAR LOT XL XU YI R AUC UCP DIF PCT ;
  BY SYS;
```

B.8 - Modified Alt 3 Non-linear Regression

This program was used to run the non-linear regression procedure for the Modified Alt 3 formulation.

```
OPTIONS LINESIZE = 80;
DATA INP;
  INFILE INP;
INPUT SYS $ LOT QTY AUC;
```

```
  RETAIN XL 0 XU 0 VI 0;
    IF LOT = 1 THEN XU = 0;
    IF LOT > 0 THEN XU + QTY;
      XL = XU - QTY;
    IF LOT = 1 THEN XL = .0000001;
      R = (QTY/LAG1(QTY));
    IF LOT = 1 THEN R = 1;
    TCA = QTY * AUC;
PROC SORT DATA = INP;
  BY SYS;
PROC NLIN DATA = INP
  METHOD = MARQUARDT
  MAXITER = 100
  CONVERGE = .00000000000000001;
  PARMS A = 1
        B = 0
        C = 0
        D = 0;
    F1 = (B + (C*R) + (D*R**2) + 1);
    F2 = (XU**F1-XL**F1);
MODEL TCA= (A/F1)*F2;
  DER.A = (1/F1)*F2;
  DER.B = ((A/F1)*XU**F1*LOG(XU)) - ((A/F1**2)*XU**F1) -
          ((A/F1)*XL**F1*LOG(XL)) + ((A/F1**2)*XL**F1);
  DER.C = ((A/F1)*XU**F1*LOG(XU)*R) - ((A/F1**2)*XU**F1*R) -
          ((A/F1)*XL**F1*LOG(XL)*R) + ((A/F1**2)*XL**F1*R);
  DER.D = ((A/F1)*XU**F1*LOG(XU)*R**2) - ((A/F1**2)*R**2*XU**F1) -
          ((A/F1)*XL**F1*LOG(XL)*R**2) +   ((A/F1**2)*R**2*XL**F1);
BY SYS;
  OUTPUT OUT = NOUT
  PARMS = A0 B0 C0 D0
  PREDICTED = TCP
  RESIDUAL = RES;
  DATA OUT2;
  SET NOUT;
    UCP = TCP/QTY;
    DIF = AUC - UCP;
    PCT = 100 * DIF/AUC;
PROC PRINT DATA = OUT2;
  VAR LOT XL XU R AUC UCP DIF PCT ;
  BY SYS;
```

B.9 - Basic Learning Curve Non-linear Regression

This program was used to run the non-linear regression procedure for the Basic Learning Curve formulation.

```
OPTIONS LINESIZE = 80;
DATA INP;
  INFILE INP;
```

```
INPUT SYS $ LOT QTY AUC;
  RETAIN XL 0 XU 0 VI 0;
    IF LOT = 1 THEN XU = 0;
    IF LOT > 0 THEN XU + QTY;
      XL = XU - QTY;
    IF LOT = 1 THEN XL = .0000001;
    TCA = QTY * AUC;
PROC SORT DATA = INP;
  BY SYS;
PROC NLIN DATA = INP
  METHOD = MARQUARDT
  MAXITER = 100
  CONVERGE = .00000000000000001;
  PARMS A = 1
        B = 0;
    F1 = (B + 1);
    F2 = (XU**F1-XL**F1);
MODEL TCA= (A/F1)*F2;
  DER.A = (1/F1)*F2;
  DER.B = ((A/F1)*XU**F1*LOG(XU)) - ((A/F1**2)*XU**F1) -
          ((A/F1)*XL**F1*LOG(XL)) + ((A/F1**2)*XL**F1);
BY SYS;
  OUTPUT OUT = NOUT
  PARMS = A0 B0 C0 D0
  PREDICTED = TCP
  RESIDUAL = RES;
  DATA OUT2;
  SET NOUT;
    UCP = TCP/QTY;
    DIF = AUC - UCP;
    PCT = 100 * DIF/AUC;
PROC PRINT DATA = OUT2;
  VAR LOT XL XU AUC UCP DIF PCT ;
  BY SYS;
```

Appendix C: SAS Computer Output Summary

This appendix contains the summary results of the SAS computer runs. The results are summarized by model formulation and program type.

C.1 - Alternative One Stepwise Regression

This section contains the summary results produced by the stepwise procedure in SAS. The SAS program used to produce this run was discussed in Appendix B.1.

C.1.1 - Bomber Aircraft Programs

----------SYS=B-1B----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	2	1.47983409	0.73991705	2237.75	0.0004
ERROR	2	0.00066131	0.00033065		
TOTAL	4	1.48049540			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	6.12415495				
Z1	-0.22731519	0.03635445	0.01292749	39.10	0.0246
Z2	-0.10701422	0.04649846	0.00175137	5.30	0.1480

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9984	0.9984	2.80967
2	Z2		2	0.0012	0.9996	2.04422

STEP	VARIABLE ENTERED	VARIABLE REMOVED	F	PROB>F
1	Z1		1837.8954	0.0001
2	Z2		5.2967	0.1480

----------SYS=B-52----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.98951441	0.98951441	10.54	0.0118
ERROR	8	0.75101711	0.09387714		
TOTAL	9	1.74053152			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	4.66879195				
Z1	-0.21690646	0.06680998	0.98951441	10.54	0.0118

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.5685	0.5685	0.81960

----------SYS=B-58----------

NO VARIABLES MET THE 0.1500 SIGNIFICANCE LEVEL FOR ENTRY INTO THE MODEL.

C.1.2 - Fighter Aircraft Programs

----------SYS=A-10----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.20697599	0.20697599	8.93	0.0203
ERROR	7	0.16217060	0.02316723		
TOTAL	8	0.36914658			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	2.98062538				
Z2	-0.18585056	0.06217860	0.20697599	8.93	0.0203

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z2		1	0.5607	0.5607	0.27142

----------SYS=F-100----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.51333658	0.51333658	95.15	0.0023
ERROR	3	0.01618481	0.00539494		
TOTAL	4	0.52952138			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	2.18648143				
Z1	-0.15830979	0.01622930	0.51333658	95.15	0.0023

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9694	0.9694	0.42939

----------SYS=F-101----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.92472428	0.92472428	69.59	0.0011
ERROR	4	0.05315185	0.01328796		
TOTAL	5	0.97787613			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	3.32628329				
Z1	-0.25635237	0.03072985	0.92472428	69.59	0.0011

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9456	0.9456	0.69892

----------SYS=F-102----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	1.45937506	1.45937506	94.06	0.0105
ERROR	2	0.03103201	0.01551601		
TOTAL	3	1.49040707			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	3.39652787				
Z1	-0.37709990	0.03888328	1.45937506	94.06	0.0105

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9792	0.9792	.

----------SYS=F-106----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	1.19964727	1.19964727	30.66	0.0311
ERROR	2	0.07824803	0.03912402		
TOTAL	3	1.27789530			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	4.79595764				
Z1	-0.49884822	0.09008726	1.19964727	30.66	0.0311

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9388	0.9388	.

----------SYS=F-15AB----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.15260233	0.15260233	146.05	0.0003
ERROR	4	0.00417943	0.00104486		
TOTAL	5	0.15678176			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	3.52762254				
Z1	-0.13148161	0.01087959	0.15260233	146.05	0.0003

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9733	0.9733	0.53578

----------SYS=F-15CD----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	2	0.09702437	0.04851218	10.44	0.0164
ERROR	5	0.02322933	0.00464587		
TOTAL	7	0.12025370			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	3.88769141				
Z2	-0.24027715	0.06904562	0.05626255	12.11	0.0177
Z3	0.35007163	0.12433319	0.03683040	7.93	0.0373

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z2		1	0.5006	0.5006	10.6870
2	Z3		2	0.3063	0.8068	3.6805

STEP	VARIABLE ENTERED	VARIABLE REMOVED	F	PROB>F
1	Z2		6.0134	0.0496
2	Z3		7.9276	0.0373

----------SYS=F-15E----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.03658110	0.03658110	14.86	0.0182
ERROR	4	*0.00984798*	*0.00246199*		
TOTAL	5	0.04642908			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	4.74308354				
Z2	-0.41938638	0.10880016	0.03658110	14.86	0.0182

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z2		1	0.7879	0.7879	0.62789

----------SYS=F-16AB----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.28836638	0.28836638	10.64	0.0471
ERROR	3	0.08130971	0.02710324		
TOTAL	4	0.36967609			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	3.18677898				
Z1	-0.22828275	0.06998603	0.28836638	10.64	0.0471

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.7801	0.7801	0.44534

----------SYS=F-16E----------

NO VARIABLES MET THE 0.1500 SIGNIFICANCE LEVEL FOR ENTRY INTO THE MODEL.

C.1.3 - Electronics Programs

----------SYS=ARC-109V----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.16857539	0.16857539	17.20	0.0255
ERROR	3	0.02940906	0.00980302		
TOTAL	4	0.19798445			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-2.85965214				
Z2	-0.13022074	0.03140241	0.16857539	17.20	0.0255

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z2		1	0.8515	0.8515	0.06968

----------SYS=ARC-54----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.11782452	0.11782452	69.37	0.0004
ERROR	5	0.00849241	0.00169848		
TOTAL	6	0.12631693			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-3.18672110				
Z1	-0.12274020	0.01473668	0.11782452	69.37	0.0004

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9328	0.9328	2.66282

----------SYS=ASN-63----------

NO VARIABLES MET THE 0.1500 SIGNIFICANCE LEVEL FOR ENTRY INTO THE MODEL.

----------SYS=ASN-70----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.02259868	0.02259868	8.17	0.0289
ERROR	6	0.01660517	0.00276753		
TOTAL	7	0.03920385			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-3.14533001				
Z2	-0.04210252	0.01473373	0.02259868	8.17	0.0289

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z2		1	0.5764	0.5764	1.19724

----------SYS=ASN-99----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	2	0.25772544	0.12886272	10.36	0.0167
ERROR	5	0.06217734	0.01243547		
TOTAL	7	0.31990278			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-1.47293904				
Z2	-0.31785019	0.06985813	0.25743834	20.70	0.0061
Z3	0.16225714	0.05367918	0.11362084	9.14	0.0293

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z2		1	0.4505	0.4505	8.07121
2	Z3		2	0.3552	0.8056	2.26942

STEP	VARIABLE ENTERED	VARIABLE REMOVED	F	PROB>F
1	Z2		4.9183	0.0684
2	Z3		9.1368	0.0293

----------SYS=ASN-108----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.11931741	0.11931741	15.24	0.0298
ERROR	3	0.02348470	0.00782823		
TOTAL	4	0.14280211			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-1.91448159				
Z1	-0.09411975	0.02410798	0.11931741	15.24	0.0298

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.8355	0.8355	0.87287

----------SYS=ASQ-133----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.27102133	0.27102133	32.26	0.0047
ERROR	4	0.03360165	0.00840041		
TOTAL	5	0.30462298			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-0.21450800				
Z1	-0.15053337	0.02650217	0.27102133	32.26	0.0047

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.8897	0.8897	4.46246

----------SYS=ASW-32----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.21856871	0.21856871	5.03	0.0883
ERROR	4	0.17379957	0.04344989		
TOTAL	5	0.39236828			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-1.32228292				
Z1	-0.14043494	0.06261459	0.21856871	5.03	0.0883

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.5570	0.5570	0.21113

----------SYS=CP-1035N----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.05792215	0.05792215	6.11	0.0688
ERROR	4	0.03789921	0.00947480		
TOTAL	5	0.09582136			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-2.03789151				
Z3	-0.31162836	0.12603747	0.05792215	6.11	0.0688

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z3		1	0.6045	0.6045	3.10786

----------SYS=JTIDS----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	2	0.24230749	0.12115375	5290.21	0.0002
ERROR	2	0.00004580	0.00002290		
TOTAL	4	0.24235329			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-0.33401008				
Z1	-0.20897458	0.00209788	0.22724228	9922.59	0.0001
Z3	-0.05562741	0.00885443	0.00090390	39.47	0.0244

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9961	0.9961	23.9601
2	Z3		2	0.0037	0.9998	2.2038

STEP	VARIABLE ENTERED	REMOVED	F	PROB>F
1	Z1		762.5651	0.0001
2	Z3		39.4690	0.0244

----------SYS=LANNAV----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.40052225	0.40052225	40204.49	0.0001
ERROR	5	0.00004981	0.00000996		
TOTAL	6	0.40057206			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	0.64554446				
Z1	-0.12220077	0.00060945	0.40052225	40204.49	0.0001

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9999	0.9999	137.757

----------SYS=LANTARP----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	3	0.32598971	0.10866324	52951.22	0.0001
ERROR	3	0.00000616	0.00000205		
TOTAL	6	0.32599587			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	0.44676552				
Z1	-0.10450506	0.00138309	0.01171607	5709.20	0.0001
Z2	-0.00808155	0.00204500	0.00003205	15.62	0.0289
Z3	0.00942504	0.00105858	0.00016268	79.27	0.0030

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9994	0.9994	96.9632
2	Z3		2	0.0005	0.9999	17.6171
3	Z2		3	0.0001	1.0000	4.0000

STEP	VARIABLE ENTERED	REMOVED	F	PROB>F
1	Z1		7940.7559	0.0001
2	Z3		17.4777	0.0139
3	Z2		15.6171	0.0289

----------SYS=LANTREC----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.14785176	0.14785176	758.78	0.0001
ERROR	3	0.00058456	0.00019485		
TOTAL	4	0.14843632			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-0.34649331				
Z1	-0.14556527	0.00528443	0.14785176	758.78	0.0001

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9961	0.9961	0.94033

C.1.4 - Helicopter Programs

----------SYS=HH-52----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.12412828	0.12412828	38.92	0.0034
ERROR	4	0.01275667	0.00318917		
TOTAL	5	0.13688495			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	0.83324089				
Z1	-0.18605919	0.02982321	0.12412828	38.92	0.0034

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9068	0.9068	25.0699

----------SYS=CH-46----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	2	1.26216747	0.63108374	75.38	0.0002
ERROR	5	0.04186031	0.00837206		
TOTAL	7	1.30402778			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	2.91405691				
Z1	-0.12800003	0.03385284	0.11969126	14.30	0.0129
Z2	-0.29649699	0.07233527	0.14066073	16.80	0.0094

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z2		1	0.8761	0.8761	13.5478
2	Z1		2	0.0918	0.9679	2.5469

STEP	VARIABLE ENTERED	REMOVED	F	PROB>F
1	Z2		42.4314	0.0006
2	Z1		14.2965	0.0129

----------SYS=H-53----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.36413891	0.36413891	56.37	0.0003
ERROR	6	0.03876051	0.00646008		
TOTAL	7	0.40289942			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	2.07266030				
Z1	-0.14183982	0.01889225	0.36413891	56.37	0.0003

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9038	0.9038	0.13053

----------SYS=CH-47----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	2	0.95253232	0.47626616	43.60	0.0001
ERROR	9	0.09832239	0.01092471		
TOTAL	11	1.05085471			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	2.68400939				
Z1	-0.11827591	0.02135363	0.33516543	30.68	0.0004
Z2	-0.22206813	0.03636441	0.40740777	37.29	0.0002

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z2		1	0.5875	0.5875	27.3173
2	Z1		2	0.3189	0.9064	2.0106

STEP	VARIABLE ENTERED	VARIABLE REMOVED	F	PROB>F
1	Z2		14.2419	0.0036
2	Z1		30.6796	0.0004

----------SYS=H-54----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.18000333	0.18000333	10.45	0.0481
ERROR	3	0.05167528	0.01722509		
TOTAL	4	0.23167861			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	1.76204133				
Z1	-0.15447484	0.04778574	0.18000333	10.45	0.0481

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.7770	0.7770	0.76561

----------SYS=HH-60D----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	3	0.07173034	0.02391011	99999.99	0.0001
ERROR	0	0.00000000	0.00000000		
TOTAL	3	0.07173034			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	2.29791868				
Z1	-0.05518571	0	0.00051405	99999.99	0.0001
Z2	-0.05128225	0	0.00017748	99999.99	0.0001
Z3	-0.01013906	0	0.00005455	99999.99	0.0001

	VARIABLE		NUMBER	PARTIAL	MODEL	
STEP	ENTERED	REMOVED	IN	R**2	R**2	C(P)
1	Z2		1	0.9785	0.9785	.
2	Z1		2	0.0207	0.9992	.
3	Z3		3	0.0008	1.0000	.

	VARIABLE			
STEP	ENTERED	REMOVED	F	PROB>F
1	Z2		91.1672	0.0108
2	Z1		27.2272	0.1205
3	Z3		9999.9999	0.0001

----------SYS=SH-3----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.32143167	0.32143167	24.60	0.0016
ERROR	7	0.09147543	0.01306792		
TOTAL	8	0.41290709			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	1.49416647				
Z1	-0.15806200	0.03187031	0.32143167	24.60	0.0016

	VARIABLE		NUMBER	PARTIAL	MODEL	
STEP	ENTERED	REMOVED	IN	R**2	R**2	C(P)
1	Z1		1	0.7785	0.7785	0.32533

C.1.5 - Tactical Armament Programs

----------SYS=LLLGB----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.71772163	0.71772163	3753.30	0.0001
ERROR	8	0.00152979	0.00019122		
TOTAL	9	0.71925142			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-2.51061063				
Z1	-0.17034813	0.00278055	0.71772163	3753.30	0.0001

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9979	0.9979	1.86619

----------SYS=CEM----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	2.32168009	2.32168009	186.61	0.0001
ERROR	6	0.07464916	0.01244153		
TOTAL	7	2.39632925			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-1.29953645				
Z2	-0.28820070	0.02109748	2.32168009	186.61	0.0001

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z2		1	0.9688	0.9688	19.5040

----------SYS=GBU-15----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.09760238	0.09760238	8.61	0.0219
ERROR	7	0.07931718	0.01133103		
TOTAL	8	0.17691956			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-1.23612677				
Z2	-0.10838260	0.03692870	0.09760238	8.61	0.0219

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z2		1	0.5517	0.5517	0.04778

C.1.6 - Tactical Missile Programs

----------SYS=AMRAAM----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	3.86655114	3.86655114	7317.93	0.0001
ERROR	8	0.00422694	0.00052837		
TOTAL	9	3.87077808			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	1.68243228				
Z1	-0.35610306	0.00416276	3.86655114	7317.93	0.0001

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9989	0.9989	0.66469

SYS=HARM

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	2	2.42845988	1.21422994	2171.92	0.0001
ERROR	8	0.00447246	0.00055906		
TOTAL	10	2.43293234			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	0.93266880				
Z1	-0.16383163	0.01057877	0.13408539	239.84	0.0001
Z2	-0.13846115	0.01818247	0.03241955	57.99	0.0001

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9848	0.9848	50.7702
2	Z2		2	0.0133	0.9982	2.0036

STEP	VARIABLE ENTERED	VARIABLE REMOVED	F	PROB>F
1	Z1		584.5267	0.0001
2	Z2		57.9896	0.0001

SYS=IIR

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	2	2.66443838	1.33221919	216.95	0.0001
ERROR	6	0.03684343	0.00614057		
TOTAL	8	2.70128181			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-0.01993208				
Z1	-0.27368702	0.01359177	2.48980270	405.47	0.0001
Z3	-0.19600006	0.04731759	0.10536003	17.16	0.0061

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z2		1	0.9569	0.9569	12.9577
2	Z1		2	0.0142	0.9711	9.0447
3	Z3		3	0.0169	0.9880	4.0000
4		Z2	2	0.0016	0.9864	2.6876

STEP	VARIABLE ENTERED	VARIABLE REMOVED	F	PROB>F
1	Z2		155.5503	0.0001
2	Z1		2.9455	0.1369
3	Z3		7.0447	0.0452
4		Z2	0.6876	0.4447

----------SYS=AIM7F-R----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	2	3.46010800	1.73005400	584.48	0.0001
ERROR	5	0.01479983	0.00295997		
TOTAL	7	3.47490783			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	1.70702999				
Z1	-0.28922188	0.04392532	0.12832732	43.35	0.0012
Z2	-0.21517373	0.08426409	0.01930102	6.52	0.0510

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9902	0.9902	6.43688
2	Z2		2	0.0056	0.9957	2.52962

STEP	VARIABLE ENTERED	VARIABLE REMOVED	F	PROB>F
1	Z1		605.4055	0.0001
2	Z2		6.5207	0.0510

----------SYS=AIM7F-GD----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	2	5.01319984	2.50659992	307.99	0.0003
ERROR	3	0.02441606	0.00813869		
TOTAL	5	5.03761591			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	1.11510720				
Z1	-0.45127619	0.01913489	4.52675705	556.20	0.0002
Z3	-0.16801516	0.06242494	0.05895695	7.24	0.0743

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9834	0.9834	8.45841
2	Z3		2	0.0117	0.9952	3.06278

C.2 - Alternative Two Stepwise Regression

This section contains the summary results produced by the stepwise regression procedure in SAS. The SAS program used to produce this run was discussed in Appendix B.2.

C.2.1 - Bomber Aircraft Programs

----------SYS=B-1B----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	1.47808272	1.47808272	1837.90	0.0001
ERROR	3	0.00241268	0.00080423		
TOTAL	4	1.48049540			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	6.06180789				
Z1	-0.31029881	0.00723802	1.47808272	1837.90	0.0001

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9984	0.9984	0.06309

----------SYS=B-52----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.98951441	0.98951441	10.54	0.0118
ERROR	8	0.75101711	0.09387714		
TOTAL	9	1.74053152			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	4.66879195				
Z1	-0.21690646	0.06680998	0.98951441	10.54	0.0118

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.5685	0.5685	0.39006

----------SYS=B-58----------

NO VARIABLES MET THE 0.1500 SIGNIFICANCE LEVEL FOR ENTRY INTO THE MODEL.

C.2.2 - Fighter Aircraft Programs

----------SYS=A-10----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.18748236	0.18748236	7.22	0.0312
ERROR	7	0.18166422	0.02595203		
TOTAL	8	0.36914658			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	2.41566916				
Z2	-0.00043912	0.00016338	0.18748236	7.22	0.0312

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z2		1	0.5079	0.5079	0.74678

----------SYS=F-100----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.51333658	0.51333658	95.15	0.0023
ERROR	3	0.01618481	0.00539494		
TOTAL	4	0.52952138			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	2.18648143				
Z1	-0.15830979	0.01622930	0.51333658	95.15	0.0023

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9694	0.9694	0.11265

----------SYS=F-101----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.92472428	0.92472428	69.59	0.0011
ERROR	4	0.05315185	0.01328796		
TOTAL	5	0.97787613			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	3.32628329				
Z1	-0.25635237	0.03072985	0.92472428	69.59	0.0011

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9456	0.9456	0.15794

----------SYS=F-102----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	3	1.49040707	0.49680236	99999.99	0.0001
ERROR	0	0.00000000	0.00000000		
TOTAL	3	1.49040707			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	3.05172818				
Z1	-0.18951594	0	0.00004665	99999.99	0.0001
Z2	-0.00136208	0	0.00006041	99999.99	0.0001
Z3	0.00000208	0	0.00006824	99999.99	0.0001

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9792	0.9792	.
2	Z3		2	0.0208	1.0000	.
3	Z2		3	0.0000	1.0000	.

STEP	VARIABLE ENTERED	VARIABLE REMOVED	F	PROB>F
1	Z1		94.0561	0.0105
2	Z3		512.6888	0.0281
3	Z2		9999.9999	0.0001

----------SYS=F-106----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	1.19964727	1.19964727	30.66	0.0311
ERROR	2	0.07824803	0.03912402		
TOTAL	3	1.27789530			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	4.79595764				
Z1	-0.49884822	0.09008726	1.19964727	30.66	0.0311

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9388	0.9388	.

----------SYS=F-15AB----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.15260233	0.15260233	146.05	0.0003
ERROR	4	0.00417943	0.00104486		
TOTAL	5	0.15678176			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	3.52762254				
Z1	-0.13148161	0.01087959	0.15260233	146.05	0.0003

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9733	0.9733	22.1078

----------SYS=F-15CD----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.06585355	0.06585355	7.26	0.0358
ERROR	6	0.05440015	0.00906669		
TOTAL	7	0.12025370			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	3.31595564				
Z2	-0.00146562	0.00054382	0.06585355	7.26	0.0358

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z2		1	0.5476	0.5476	4.60580

----------SYS=F-15E----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.03589868	0.03589868	13.64	0.0210
ERROR	4	0.01053040	0.00263260		
TOTAL	5	0.04642908			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	3.06410108				
Z3	-0.00000446	0.00000121	0.03589868	13.64	0.0210

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z3		1	0.7732	0.7732	0.15050

----------SYS=F-16AB----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.28836638	0.28836638	10.64	0.0471
ERROR	3	0.08130971	0.02710324		
TOTAL	4	0.36967609			

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.7801	0.7801	0.42225

----------SYS=F-16E----------

NO VARIABLES MET THE 0.1500 SIGNIFICANCE LEVEL FOR ENTRY INTO THE MODEL.

C.2.3 - Electronics Programs

----------SYS=ARC-109V----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.16351455	0.16351455	14.23	0.0326
ERROR	3	0.03446990	0.01148997		
TOTAL	4	0.19798445			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-2.99345507				
Z1	-0.09510960	0.02521190	0.16351455	14.23	0.0326

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.8259	0.8259	0.14665

----------SYS=ARC-54----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.11782452	0.11782452	69.37	0.0004
ERROR	5	0.00849241	0.00169848		
TOTAL	6	0.12631693			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-3.18672110				
Z1	-0.12274020	0.01473668	0.11782452	69.37	0.0004

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9328	0.9328	1.18511

----------SYS=ASN-63----------

NO VARIABLES MET THE 0.1500 SIGNIFICANCE LEVEL FOR ENTRY INTO THE MODEL.

----------SYS=ASN-70----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	2	0.02702549	0.01351275	5.55	0.0538
ERROR	5	0.01217836	0.00243567		
TOTAL	7	0.03920385			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-3.20442829				
Z2	-0.00046417	0.00015919	0.02070889	8.50	0.0332
Z3	0.00000146	0.00000061	0.01411101	5.79	0.0611

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z2		1	0.3294	0.3294	4.65112
2	Z3		2	0.3599	0.6894	2.00757

STEP	VARIABLE ENTERED	VARIABLE REMOVED	F	PROB>F
1	Z2		2.9475	0.1368
2	Z3		5.7935	0.0611

----------SYS=ASN-99----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	2	0.24600823	0.12300412	8.32	0.0256
ERROR	5	0.07389455	0.01477891		
TOTAL	7	0.31990278			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-3.44823854				
Z1	0.10330948	0.04664951	0.07248174	4.90	0.0777
Z3	-0.00000112	0.00000036	0.14281158	9.66	0.0266

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z3		1	0.5424	0.5424	4.71978
2	Z1		2	0.2266	0.7690	2.40197

STEP	VARIABLE ENTERED	VARIABLE REMOVED	F	PROB>F
1	Z3		7.1129	0.0372
2	Z1		4.9044	0.0777

----------SYS=ASN-108----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.11931741	0.11931741	15.24	0.0298
ERROR	3	0.02348470	0.00782823		
TOTAL	4	0.14280211			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-1.91448159				
Z1	-0.09411975	0.02410798	0.11931741	15.24	0.0298

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.8355	0.8355	1.14818

----------SYS=ASQ-133----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	2	0.29373628	0.14686814	40.47	0.0068
ERROR	3	0.01088670	0.00362890		
TOTAL	5	0.30462298			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-0.41860430				
Z2	-0.00317744	0.00084376	0.05146323	14.18	0.0328
Z3	0.00002187	0.00001040	0.01605538	4.42	0.1262

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z2		1	0.9116	0.9116	3.29289
2	Z3		2	0.0527	0.9643	2.13874

STEP	VARIABLE ENTERED	VARIABLE REMOVED	F	PROB>F
1	Z2		41.2264	0.0030
2	Z3		4.4243	0.1262

----------SYS=ASW-32----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.21856871	0.21856871	5.03	0.0883
ERROR	4	0.17379957	0.04344989		
TOTAL	5	0.39236828			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-1.32228292				
Z1	-0.14043494	0.06261459	0.21856871	5.03	0.0883

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.5570	0.5570	1.15295

----------SYS=CP-1035N----------

NO VARIABLES MET THE 0.1500 SIGNIFICANCE LEVEL FOR ENTRY INTO THE MODEL.

----------SYS=JTIDS----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.24140359	0.24140359	762.57	0.0001
ERROR	3	0.00094970	0.00031657		
TOTAL	4	0.24235329			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-0.35560158				
Z1	-0.20491481	0.00742053	0.24140359	762.57	0.0001

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9961	0.9961	1.48010

----------SYS=LANNAV----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	2	0.40055971	0.20027985	64829.71	0.0001
ERROR	4	0.00001236	0.00000309		
TOTAL	6	0.40057206			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	0.64140172				
Z1	-0.11867768	0.00106724	0.03820152	12365.66	0.0001
Z2	-0.00002120	0.00000609	0.00003745	12.12	0.0253

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9999	0.9999	9.21020
2	Z2		2	0.0001	1.0000	2.02917

STEP	VARIABLE ENTERED	VARIABLE REMOVED	F	PROB>F
1	Z1		9999.9999	0.0001
2	Z2		12.1235	0.0253

----------SYS=LANTARP----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	2	0.32593843	0.16296922	11350.17	0.0001
ERROR	4	0.00005743	0.00001436		
TOTAL	6	0.32599587			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	0.43759694				
Z1	-0.10357037	0.00235097	0.02786640	1940.79	0.0001
Z2	-0.00004311	0.00001344	0.00014771	10.29	0.0327

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9994	0.9994	15.4321
2	Z2		2	0.0005	0.9998	4.1605

STEP	VARIABLE ENTERED	VARIABLE REMOVED	F	PROB>F
1	Z1		7940.7559	0.0001
2	Z2		10.2871	0.0327

----------SYS=LANTREC----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.14785176	0.14785176	758.78	0.0001
ERROR	3	0.00058456	0.00019485		
TOTAL	4	0.14843632			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-0.34649331				
Z1	-0.14556527	0.00528443	0.14785176	758.78	0.0001

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9961	0.9961	1.41027

C.2.4 - Helicopter Programs

----------SYS=HH-52----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.12412828	0.12412828	38.92	0.0034
ERROR	4	0.01275667	0.00318917		
TOTAL	5	0.13688495			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	0.83324089				
Z1	-0.18605919	0.02982321	0.12412828	38.92	0.0034

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9068	0.9068	21.4655

----------SYS=CH-46----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	1.12150675	1.12150675	36.87	0.0009
ERROR	6	0.18252104	0.03042017		
TOTAL	7	1.30402778			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	2.22820194				
Z1	-0.23817890	0.03922683	1.12150675	36.87	0.0009

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.8600	0.8600	1.90826

----------SYS=H-53----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.36413891	0.36413891	56.37	0.0003
ERROR	6	0.03876051	0.00646008		
TOTAL	7	0.40289942			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	2.07266030				
Z1	-0.14183982	0.01889225	0.36413891	56.37	0.0003

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9038	0.9038	0.03386

----------SYS=CH-47----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	3	0.94598510	0.31532837	24.05	0.0002
ERROR	8	0.10486961	0.01310870		
TOTAL	11	1.05085471			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	1.98150621				
Z1	-0.07590720	0.02686504	0.10465273	7.98	0.0223
Z2	-0.00176284	0.00051800	0.15182170	11.58	0.0093
Z3	0.00000688	0.00000302	0.06788950	5.18	0.0524

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z2		1	0.6285	0.6285	21.7774
2	Z1		2	0.2071	0.8356	7.1790
3	Z3		3	0.0646	0.9002	4.0000

STEP	VARIABLE ENTERED	REMOVED	F	PROB>F
1	Z2		16.9213	0.0021
2	Z1		11.3352	0.0083
3	Z3		5.1790	0.0524

----------SYS=H-54----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.18000333	0.18000333	10.45	0.0481
ERROR	3	0.05167528	0.01722509		
TOTAL	4	0.23167861			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	1.76204133				
Z1	-0.15447484	0.04778574	0.18000333	10.45	0.0481

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.7770	0.7770	1.50618

----------SYS=HH-60D----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.06912153	0.06912153	52.99	0.0184
ERROR	2	0.00260882	0.00130441		
TOTAL	3	0.07173034			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	2.23770674				
Z1	-0.08690880	0.01193889	0.06912153	52.99	0.0184

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9636	0.9636	.

----------SYS=SH-3----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.32143167	0.32143167	24.60	0.0016
ERROR	7	0.09147543	0.01306792		
TOTAL	8	0.41290709			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	1.49416647				
Z1	-0.15806200	0.03187031	0.32143167	24.60	0.0016

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.7785	0.7785	6.18436

C.2.5 - Tactical Armament Programs

SYS=LLLGB

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.71772163	0.71772163	3753.30	0.0001
ERROR	8	0.00152979	0.00019122		
TOTAL	9	0.71925142			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-2.51061063				
Z1	-0.17034813	0.00278055	0.71772163	3753.30	0.0001

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9979	0.9979	5.09779

SYS=CEM

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	3	2.39311941	0.79770647	994.08	0.0001
ERROR	4	0.00320984	0.00080246		
TOTAL	7	2.39632925			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-1.41663745				
Z1	-0.31206595	0.01131836	0.61002677	760.20	0.0001
Z2	0.00000296	0.00000037	0.04990959	62.20	0.0014
Z3	-0.00000000	0.00000000	0.02968677	36.99	0.0037

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9671	0.9671	94.1097
2	Z2		2	0.0191	0.9863	38.9947
3	Z3		3	0.0124	0.9987	4.0000

STEP	VARIABLE ENTERED	VARIABLE REMOVED	F	PROB>F
1	Z1		176.6261	0.0001
2	Z2		6.9661	0.0460
3	Z3		36.9947	0.0037

SYS=GBU-15

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	2	0.15959725	0.07979863	27.64	0.0009
ERROR	6	0.01732231	0.00288705		
TOTAL	8	0.17691956			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-1.54399316				
Z2	-0.00037584	0.00005466	0.13651261	47.28	0.0005
Z3	0.00000051	0.00000008	0.11268652	39.03	0.0008

	VARIABLE		NUMBER	PARTIAL	MODEL	
STEP	ENTERED	REMOVED	IN	R**2	R**2	C(P)
1	Z1		1	0.5313	0.5313	19.9435
2	Z3		2	0.2023	0.7336	11.1799
3	Z2		3	0.1725	0.9060	4.0000
4		Z1	2	0.0040	0.9021	2.2107

	VARIABLE			
STEP	ENTERED	REMOVED	F	PROB>F
1	Z1		7.9351	0.0259
2	Z3		4.5544	0.0768
3	Z2		9.1799	0.0291
4		Z1	0.2107	0.6655

C.2.6 - Tactical Missile Programs

----------SYS=AMRAAM----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	3.86655114	3.86655114	7317.93	0.0001
ERROR	8	0.00422694	0.00052837		
TOTAL	9	3.87077808			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	1.68243228				
Z1	-0.35610306	0.00416276	3.86655114	7317.93	0.0001

	VARIABLE		NUMBER	PARTIAL	MODEL	
STEP	ENTERED	REMOVED	IN	R**2	R**2	C(P)
1	Z1		1	0.9989	0.9989	1.62694

----------SYS=HARM----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	2.39604033	2.39604033	584.53	0.0001
ERROR	9	0.03689201	0.00409911		
TOTAL	10	2.43293234			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	0.55630848				
Z1	-0.23942286	0.00990292	2.39604033	584.53	0.0001

	VARIABLE		NUMBER	PARTIAL	MODEL	
STEP	ENTERED	REMOVED	IN	R**2	R**2	C(P)
1	Z1		1	0.9848	0.9848	5.08763

----------SYS=IIR----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	2.55907835	2.55907835	125.97	0.0001
ERROR	7	0.14220346	0.02031478		
TOTAL	8	2.70128181			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-0.31423346				
Z1	-0.24873883	0.02216194	2.55907835	125.97	0.0001

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9474	0.9474	0.61507

----------SYS=AIM7F-R----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	3.44080698	3.44080698	605.41	0.0001
ERROR	6	0.03410085	0.00568347		
TOTAL	7	3.47490783			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	1.07890599				
Z1	-0.39736762	0.01614988	3.44080698	605.41	0.0001

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9902	0.9902	1.66043

----------SYS=AIM7F-GD----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	4.95424289	4.95424289	237.69	0.0001
ERROR	4	0.08337301	0.02084325		
TOTAL	5	5.03761591			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	1.04508899				
Z1	-0.46191702	0.02996112	4.95424289	237.69	0.0001

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9834	0.9834	0.65336

C.3 - Modified Alternative One Stepwise Regression

This section contains the summary results produced by the stepwise regression procedure in SAS. The SAS program used to produce this run was discussed in Appendix B.3.

C.3.1 - Bomber Aircraft Programs

----------SYS=B-1B----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	2	1.47983409	0.73991705	2237.75	0.0004
ERROR	2	0.00066131	0.00033065		
TOTAL	4	1.48049540			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	6.12415495				
Z1	-0.22731519	0.03635445	0.01292749	39.10	0.0246
Z2	-0.10701422	0.04649846	0.00175137	5.30	0.1480

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9984	0.9984	.
2	Z2		2	0.0012	0.9996	.

STEP	VARIABLE ENTERED	VARIABLE REMOVED	F	PROB>F
1	Z1		1837.8954	0.0001
2	Z2		5.2967	0.1480

----------SYS=B-52----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.98951441	0.98951441	10.54	0.0118
ERROR	8	0.75101711	0.09387714		
TOTAL	9	1.74053152			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	4.66879195				
Z1	-0.21690646	0.06680998	0.98951441	10.54	0.0118

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.5685	0.5685	0.22323

----------SYS=B-58----------

NO VARIABLES MET THE 0.1500 SIGNIFICANCE LEVEL FOR ENTRY INTO THE MODEL.

C.3.2 - Fighter Aircraft Programs

----------SYS=A-10----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.20697599	0.20697599	8.93	0.0203
ERROR	7	0.16217060	0.02316723		
TOTAL	8	0.36914658			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	2.98062538				
Z2	-0.18585056	0.06217860	0.20697599	8.93	0.0203

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z2		1	0.5607	0.5607	-0.02786

----------SYS=F-100----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.51333658	0.51333658	95.15	0.0023
ERROR	3	0.01618481	0.00539494		
TOTAL	4	0.52952138			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	2.18648143				
Z1	-0.15830979	0.01622930	0.51333658	95.15	0.0023

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9694	0.9694	.

----------SYS=F-101----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.92472428	0.92472428	69.59	0.0011
ERROR	4	0.05315185	0.01328796		
TOTAL	5	0.97787613			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	3.32628329				
Z1	-0.25635237	0.03072985	0.92472428	69.59	0.0011

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9456	0.9456	-0.64188

----------SYS=F-102----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	3	1.49040707	0.49680236	99999.99	0.0001
ERROR	0	0.00000000	0.00000000		
TOTAL	3	1.49040707			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	3.93259582				
Z1	-0.34479395	0	0.04063607	99999.99	0.0001
Z2	-0.17351653	0	0.00109082	99999.99	0.0001
Z4	0.00452538	0	0.00361762	99999.99	0.0001

	VARIABLE		NUMBER	PARTIAL	MODEL	
STEP	ENTERED	REMOVED	IN	R**2	R**2	C(P)
1	Z1		1	0.9792	0.9792	.
2	Z4		2	0.0201	0.9993	.
3	Z2		3	0.0007	1.0000	.

	VARIABLE			
STEP	ENTERED	REMOVED	F	PROB>F
1	Z1		94.0561	0.0105
2	Z4		27.4485	0.1201
3	Z2		9999.9999	0.0001

----------SYS=F-106----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	1.19964727	1.19964727	30.66	0.0311
ERROR	2	0.07824803	0.03912402		
TOTAL	3	1.27789530			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	4.79595764				
Z1	-0.49884822	0.09008726	1.19964727	30.66	0.0311

	VARIABLE		NUMBER	PARTIAL	MODEL	
STEP	ENTERED	REMOVED	IN	R**2	R**2	C(P)
1	Z1		1	0.9388	0.9388	.

----------SYS=F-15A/B----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.15260233	0.15260233	146.05	0.0003
ERROR	4	0.00417943	0.00104486		
TOTAL	5	0.15678176			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	3.52762254				
Z1	-0.13148161	0.01087959	0.15260233	146.05	0.0003

	VARIABLE		NUMBER	PARTIAL	MODEL	
STEP	ENTERED	REMOVED	IN	R**2	R**2	C(P)
1	Z1		1	0.9733	0.9733	-0.25298

----------SYS=F-15CD----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	2	0.10028222	0.05014111	12.55	0.0112
ERROR	5	0.01997148	0.00399430		
TOTAL	7	0.12025370			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	4.40658802				
Z2	-0.38379314	0.07694411	0.09937655	24.88	0.0041
Z3	0.04803014	0.01516091	0.04008825	10.04	0.0249

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z2		1	0.5006	0.5006	8.43111
2	Z3		2	0.3334	0.8339	2.13368

STEP	VARIABLE ENTERED	VARIABLE REMOVED	F	PROB>F
1	Z2		6.0134	0.0496
2	Z3		10.0364	0.0249

----------SYS=F-15E----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.03658110	0.03658110	14.86	0.0182
ERROR	4	0.00984798	0.00246199		
TOTAL	5	0.04642908			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	4.74308354				
Z2	-0.41938638	0.10880016	0.03658110	14.86	0.0182

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z2		1	0.7879	0.7879	1.36436

----------SYS=F-16AB----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.30339378	0.30339378	13.73	0.0341
ERROR	3	0.06628231	0.02209410		
TOTAL	4	0.36967609			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	1.79323054				
Z3	0.11921293	0.03217053	0.30339378	13.73	0.0341

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z3		1	0.8207	0.8207	.

----------SYS=F-16E----------

NO VARIABLES MET THE 0.1500 SIGNIFICANCE LEVEL FOR ENTRY INTO THE MODEL.

C.3.3 - Electronics Programs

----------SYS=ARC-109V----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.16857539	0.16857539	17.20	0.0255
ERROR	3	0.02940906	0.00980302		
TOTAL	4	0.19798445			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-2.85965214				
Z2	-0.13022074	0.03140241	0.16857539	17.20	0.0255

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z2		1	0.8515	0.8515	.

----------SYS=ARC-54----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.11782452	0.11782452	69.37	0.0004
ERROR	5	0.00849241	0.00169848		
TOTAL	6	0.12631693			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-3.18672110				
Z1	-0.12274020	0.01473668	0.11782452	69.37	0.0004

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9328	0.9328	2.39221

----------SYS=ASN-63----------

NO VARIABLES MET THE 0.1500 SIGNIFICANCE LEVEL FOR ENTRY INTO THE MODEL.

----------SYS=ASN-70----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.02259868	0.02259868	8.17	0.0289
ERROR	6	0.01660517	0.00276753		
TOTAL	7	0.03920385			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-3.14533001				
Z2	-0.04210252	0.01473373	0.02259868	8.17	0.0289

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z2		1	0.5764	0.5764	1.63655

----------SYS=ASN-99----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	2	0.21690825	0.10845413	5.27	0.0588
ERROR	5	0.10299453	0.02059891		
TOTAL	7	0.31990278			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-1.98281650				
Z2	-0.22321542	0.07241846	0.19570144	9.50	0.0274
Z3	0.02825718	0.01503053	0.07280366	3.53	0.1189

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z2		1	0.4505	0.4505	56.9445
2	Z3		2	0.2276	0.6780	33.7055

STEP	VARIABLE ENTERED	VARIABLE REMOVED	F	PROB>F
1	Z2		4.9183	0.0684
2	Z3		3.5343	0.1189

----------SYS=ASN-108----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.11931741	0.11931741	15.24	0.0298
ERROR	3	0.02348470	0.00782823		
TOTAL	4	0.14280211			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-1.91448159				
Z1	-0.09411975	0.02410798	0.11931741	15.24	0.0298

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.8355	0.8355	.

----------SYS=ASQ-133----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.27102133	0.27102133	32.26	0.0047
ERROR	4	0.03360165	0.00840041		
TOTAL	5	0.30462298			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-0.21450800				
Z1	-0.15053337	0.02650217	0.27102133	32.26	0.0047

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.8897	0.8897	0.31390

SYS=ASW-32

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.21856871	0.21856871	5.03	0.0883
ERROR	4	0.17379957	0.04344989		
TOTAL	5	0.39236828			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-1.32228292				
Z1	-0.14043494	0.06261459	0.21856871	5.03	0.0883

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.5570	0.5570	28.0511

SYS=CP-1035N

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.06223814	0.06223814	7.41	0.0528
ERROR	4	0.03358322	0.00839581		
TOTAL	5	0.09582136			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-2.01464817				
Z4	-0.06480008	0.02380008	0.06223814	7.41	0.0528

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z4		1	0.6495	0.6495	1.19365

SYS=JTIDS

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	2	0.24213371	0.12106686	1102.71	0.0009
ERROR	2	0.00021958	0.00010979		
TOTAL	4	0.24235329			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-0.21091901				
Z1	-0.23180750	0.01130700	0.04614476	420.30	0.0024
Z3	-0.01665512	0.00645848	0.00073012	6.65	0.1232

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9961	0.9961	.
2	Z3		2	0.0030	0.9991	.

STEP	VARIABLE ENTERED	REMOVED	F	PROB>F
1	Z1		762.5651	0.0001
2	Z3		6.6502	0.1232

----------SYS=LANNAV----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.40052225	0.40052225	40204.49	0.0001
ERROR	5	0.00004981	0.00000996		
TOTAL	6	0.40057206			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	0.64554446				
Z1	-0.12220077	0.00060945	0.40052225	40204.49	0.0001

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9999	0.9999	303.121

----------SYS=LANTARP----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	2	0.32598915	0.16299457	97008.88	0.0001
ERROR	4	0.00000672	0.00000168		
TOTAL	6	0.32599587			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	0.43874654				
Z1	-0.10971994	0.00026818	0.28123695	99999.99	0.0001
Z4	0.00008308	0.00000765	0.00019842	118.09	0.0004

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9994	0.9994	209.118
2	Z4		2	0.0006	1.0000	5.949

STEP	VARIABLE ENTERED	REMOVED	F	PROB>F
1	Z1		7940.7559	0.0001
2	Z4		118.0914	0.0004

----------SYS=LANTREC----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.14785176	0.14785176	758.78	0.0001
ERROR	3	0.00058456	0.00019485		
TOTAL	4	0.14843632			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-0.34649331				
Z1	-0.14556527	0.00528443	0.14785176	758.78	0.0001

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9961	0.9961	.

C.3.4 - Helicopter Programs

----------SYS=HH-52----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.13405924	0.13405924	189.77	0.0002
ERROR	4	0.00282571	0.00070643		
TOTAL	5	0.13688495			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	0.03849064				
Z4	0.12447636	0.00903591	0.13405924	189.77	0.0002

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z4		1	0.9794	0.9794	54.1490

----------SYS=CH-46----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	2	1.26216747	0.63108374	75.38	0.0002
ERROR	5	0.04186031	0.00837206		
TOTAL	7	1.30402778			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	2.91405691				
Z1	-0.12800003	0.03385284	0.11969126	14.30	0.0129
Z2	-0.29649699	0.07233527	0.14066073	16.80	0.0094

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z2		1	0.8761	0.8761	8.24418
2	Z1		2	0.0918	0.9679	1.17264

STEP	VARIABLE ENTERED	REMOVED	F	PROB>F
1	Z2		42.4314	0.0006
2	Z1		14.2965	0.0129

----------SYS=H-53----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.36413891	0.36413891	56.37	0.0003
ERROR	6	0.03876051	0.00646008		
TOTAL	7	0.40289942			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	2.07266030				
Z1	-0.14183982	0.01889225	0.36413891	56.37	0.0003

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9038	0.9038	-0.85056

----------SYS=CH-47----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	2	0.95253232	0.47626616	43.60	0.0001
ERROR	9	0.09832239	0.01092471		
TOTAL	11	1.05085471			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	2.68400939				
Z1	-0.11827591	0.02135363	0.33516543	30.68	0.0004
Z2	-0.22206813	0.03636441	0.40740777	37.29	0.0002

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z2		1	0.5875	0.5875	23.1105
2	Z1		2	0.3189	0.9064	1.0564

STEP	VARIABLE ENTERED	REMOVED	F	PROB>F
1	Z2		14.2419	0.0036
2	Z1		30.6796	0.0004

----------SYS=H-54----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.18000333	0.18000333	10.45	0.0481
ERROR	3	0.05167528	0.01722509		
TOTAL	4	0.23167861			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	1.76204133				
Z1	-0.15447484	0.04778574	0.18000333	10.45	0.0481

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.7770	0.7770	.

----------SYS=HH-60D----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	3	0.07173034	0.02391011	99999.99	0.0001
ERROR	0	0.00000000	0.00000000		
TOTAL	3	0.07173034			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	2.30518915				
Z1	-0.05064461	0	0.00071690	99999.99	0.0001
Z2	-0.05886398	0	0.00040194	99999.99	0.0001
Z3	-0.00071212	0	0.00005455	99999.99	0.0001

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z2		1	0.9785	0.9785	.
2	Z1		2	0.0207	0.9992	.
3	Z3		3	0.0008	1.0000	.

STEP	VARIABLE ENTERED	VARIABLE REMOVED	F	PROB>F
1	Z2		91.1672	0.0108
2	Z1		27.2272	0.1205
3	Z3		9999.9999	0.0001

----------SYS=SH-3----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.32143167	0.32143167	24.60	0.0016
ERROR	7	0.09147543	0.01306792		
TOTAL	8	0.41290709			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	1.49416647				
Z1	-0.15806200	0.03187031	0.32143167	24.60	0.0016

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.7785	0.7785	0.00725

C.3.5 - Tactical Armament Programs

----------SYS=LLLGB----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.71772163	0.71772163	3753.30	0.0001
ERROR	8	0.00152979	0.00019122		
TOTAL	9	0.71925142			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-2.51061063				
Z1	-0.17034813	0.00278055	0.71772163	3753.30	0.0001

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9979	0.9979	1.11880

----------SYS=CEM----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	2	2.36370132	1.18185066	181.11	0.0001
ERROR	5	0.03262793	0.00652559		
TOTAL	7	2.39632925			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-1.09196351				
Z2	-0.30591095	0.01679777	2.16424399	331.66	0.0001
Z4	-0.00083110	0.00032751	0.04202123	6.44	0.0520

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z2		1	0.9688	0.9688	46.3232
2	Z4		2	0.0175	0.9864	19.9954

STEP	VARIABLE ENTERED	VARIABLE REMOVED	F	PROB>F
1	Z2		186.6073	0.0001
2	Z4		6.4395	0.0520

----------SYS=GBU-15----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.09760238	0.09760238	8.61	0.0219
ERROR	7	0.07931718	0.01133103		
TOTAL	8	0.17691956			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-1.23612677				
Z2	-0.10838260	0.03692870	0.09760238	8.61	0.0219

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z2		1	0.5517	0.5517	1.41277

C.3.6 - Tactical Missile Programs

----------SYS=AMRAAM----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	3.86655114	3.86655114	7317.93	0.0001
ERROR	8	0.00422694	0.00052837		
TOTAL	9	3.87077808			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	1.68243228				
Z1	-0.35610306	0.00416276	3.86655114	7317.93	0.0001

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9989	0.9989	-0.29569

SYS=HARM

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	2	2.42845988	1.21422994	2171.92	0.0001
ERROR	8	0.00447246	0.00055906		
TOTAL	10	2.43293234			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	0.93266880				
Z1	-0.16383163	0.01057877	0.13408539	239.84	0.0001
Z2	-0.13846115	0.01818247	0.03241955	57.99	0.0001

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9848	0.9848	47.7452
2	Z2		2	0.0133	0.9982	1.6368

STEP	VARIABLE ENTERED	REMOVED	F	PROB>F
1	Z1		584.5267	0.0001
2	Z2		57.9896	0.0001

SYS=IIR

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	3	2.66682132	0.88894044	128.98	0.0001
ERROR	5	0.03446049	0.00689210		
TOTAL	8	2.70128181			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	0.43571126				
Z1	-0.19118490	0.05684627	0.07795690	11.31	0.0200
Z2	-0.14216161	0.08340168	0.02002472	2.91	0.1490
Z3	-0.01186183	0.00471809	0.04356345	6.32	0.0536

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z2		1	0.9569	0.9569	11.2343
2	Z1		2	0.0142	0.9711	7.8888
3	Z3		3	0.0161	0.9872	3.8092

STEP	VARIABLE ENTERED	REMOVED	F	PROB>F
1	Z2		155.5503	0.0001
2	Z1		2.9455	0.1369
3	Z3		6.3208	0.0536

----------SYS=AIM7F-R----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	3	3.46681704	1.15560568	571.32	0.0001
ERROR	4	0.00809078	0.00202270		
TOTAL	7	3.47490783			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	1.69969019				
Z1	-0.31468519	0.03890963	0.13230278	65.41	0.0013
Z2	-0.18254365	0.07192420	0.01302909	6.44	0.0641
Z4	-0.00583438	0.00320354	0.00670905	3.32	0.1427

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9902	0.9902	8.68830
2	Z2		2	0.0056	0.9957	3.50675
3	Z4		3	0.0019	0.9977	3.01043

STEP	VARIABLE ENTERED	VARIABLE REMOVED	F	PROB>F
1	Z1		605.4055	0.0001
2	Z2		6.5207	0.0510
3	Z4		3.3169	0.1427

----------SYS=AIM7F-GD----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	4.95424289	4.95424289	237.69	0.0001
ERROR	4	0.08337301	0.02084325		
TOTAL	5	5.03761591			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	1.04508899				
Z1	-0.46191702	0.02996112	4.95424289	237.69	0.0001

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9834	0.9834	0.32703

C.4 - Modified Alternative Two Stepwise Regression

This section contains the summary results produced by the stepwise regression procedure in SAS. The SAS program used to produce this run was discussed in Appendix B.4.

C.4.1 - Bomber Aircraft Programs

----------SYS=B-1B----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	1.47808272	1.47808272	1837.90	0.0001
ERROR	3	0.00241268	0.00080423		
TOTAL	4	1.48049540			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	6.06180789				
Z1	-0.31029881	0.00723802	1.47808272	1837.90	0.0001

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9984	0.9984	.

----------SYS=B-52----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.98951441	0.98951441	10.54	0.0118
ERROR	8	0.75101711	0.09387714		
TOTAL	9	1.74053152			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	4.66879195				
Z1	-0.21690646	0.06680998	0.98951441	10.54	0.0118

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.5685	0.5685	-1.49368

----------SYS=B-58----------

NO VARIABLES MET THE 0.1500 SIGNIFICANCE LEVEL FOR ENTRY INTO THE MODEL.

C.4.2 - Fighter Aircraft Programs

----------SYS=A-10----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.18748236	0.18748236	7.22	0.0312
ERROR	7	0.18166422	0.02595203		
TOTAL	8	0.36914658			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	2.41566916				
Z2	-0.00043912	0.00016338	0.18748236	7.22	0.0312

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z2		1	0.5079	0.5079	-1.47809

----------SYS=F-100----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.51333658	0.51333658	95.15	0.0023
ERROR	3	0.01618481	0.00539494		
TOTAL	4	0.52952138			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	2.18648143				
Z1	-0.15830979	0.01622930	0.51333658	95.15	0.0023

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9694	0.9694	.

----------SYS=F-101----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.92472428	0.92472428	69.59	0.0011
ERROR	4	0.05315185	0.01328796		
TOTAL	5	0.97787613			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	3.32628329				
Z1	-0.25635237	0.03072985	0.92472428	69.59	0.0011

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9456	0.9456	.

----------SYS=F-102----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	3	1.49040707	0.49680236	99999.99	0.0001
ERROR	0	0.00000000	0.00000000		
TOTAL	3	1.49040707			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	3.48150418				
Z1	-0.40736132	0	0.81537812	99999.99	0.0001
Z3	0.00000014	0	0.00511276	99999.99	0.0001
Z4	-0.00095772	0	0.00006041	99999.99	0.0001

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9792	0.9792	.
2	Z3		2	0.0208	1.0000	.
3	Z4		3	0.0000	1.0000	.

STEP	VARIABLE ENTERED	REMOVED	F	PROB>F
1	Z1		94.0561	0.0105
2	Z3		512.6888	0.0281
3	Z4		9999.9999	0.0001

----------SYS=F-106----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	1.19964727	1.19964727	30.66	0.0311
ERROR	2	0.07824803	0.03912402		
TOTAL	3	1.27789530			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	4.79595764				
Z1	-0.49884822	0.09008726	1.19964727	30.66	0.0311

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9388	0.9388	.

----------SYS=F-15AB----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.15260233	0.15260233	146.05	0.0003
ERROR	4	0.00417943	0.00104486		
TOTAL	5	0.15678176			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	3.52762254				
Z1	-0.13148161	0.01087959	0.15260233	146.05	0.0003

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9733	0.9733	.

----------SYS=F-15CD----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	4	0.11878998	0.02969750	60.87	0.0033
ERROR	3	0.00146372	0.00048791		
TOTAL	7	0.12025370			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	0.58701319				
Z1	0.62615186	0.06423618	0.04635932	95.02	0.0023
Z2	-0.00858822	0.00105195	0.03252027	66.65	0.0038
Z3	0.00007899	0.00001050	0.02758857	56.54	0.0049
Z5	0.11367418	0.01626840	0.02382162	48.82	0.0060

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z2		1	0.5476	0.5476	72.2996
2	Z4		2	0.1826	0.7302	43.4975
3	Z1		3	0.1286	0.8589	23.8057
4	Z3		4	0.0908	0.9496	10.4951
5	Z5		5	0.0385	0.9881	6.0000
6		Z4	4	0.0003	0.9878	4.0530

STEP	VARIABLE ENTERED	VARIABLE REMOVED	F	PROB>F
1	Z2		7.2632	0.0358
2	Z4		3.3850	0.1252
3	Z1		3.6448	0.1289
4	Z3		5.4068	0.1026
5	Z5		6.4951	0.1256
6		Z4	0.0530	0.8394

----------SYS=F-15E----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.03589868	0.03589868	13.64	0.0210
ERROR	4	0.01053040	0.00263260		
TOTAL	5	0.04642908			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	3.06410108				
Z3	-0.00000446	0.00000121	0.03589868	13.64	0.0210

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z3		1	0.7732	0.7732	1.59749

----------SYS=F-16AB----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.29665823	0.29665823	12.19	0.0397
ERROR	3	0.07301787	0.02433929		
TOTAL	4	0.36967609			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	1.81923894				
Z4	0.12764470	0.03656188	0.29665823	12.19	0.0397

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z4		1	0.8025	0.8025	.

----------SYS=F-16E----------

NO VARIABLES MET THE 0.1500 SIGNIFICANCE LEVEL FOR ENTRY INTO THE MODEL.

C.4.3 - Electronics Programs

----------SYS=ARC-109V----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.16351455	0.16351455	14.23	0.0326
ERROR	3	0.03446990	0.01148997		
TOTAL	4	0.19798445			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-2.99345507				
Z1	-0.09510960	0.02521190	0.16351455	14.23	0.0326

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.8259	0.8259	.

----------SYS=ARC-54----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.11782452	0.11782452	69.37	0.0004
ERROR	5	0.00849241	0.00169848		
TOTAL	6	0.12631693			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-3.18672110				
Z1	-0.12274020	0.01473668	0.11782452	69.37	0.0004

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9328	0.9328	98.0531

----------SYS=ASN-63----------

NO VARIABLES MET THE 0.1500 SIGNIFICANCE LEVEL FOR ENTRY INTO THE MODEL.

----------SYS=ASN-70----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	2	0.02702549	0.01351275	5.55	0.0538
ERROR	5	0.01217836	0.00243567		
TOTAL	7	0.03920385			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-3.20442829				
Z2	-0.00046417	0.00015919	0.02070889	8.50	0.0332
Z3	0.00000146	0.00000061	0.01411101	5.79	0.0611

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z2		1	0.3294	0.3294	18.1826
2	Z3		2	0.3599	0.6894	8.2759

STEP	VARIABLE ENTERED	VARIABLE REMOVED	F	PROB>F
1	Z2		2.9475	0.1368
2	Z3		5.7935	0.0611

----------SYS=ASN-99----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	2	0.24600823	0.12300412	8.32	0.0256
ERROR	5	0.07389455	0.01477891		
TOTAL	7	0.31990278			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-3.44823854				
Z1	0.10330948	0.04664951	0.07248174	4.90	0.0777
Z3	-0.00000112	0.00000036	0.14281158	9.66	0.0266

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z3		1	0.5424	0.5424	17.2355
2	Z1		2	0.2266	0.7690	8.7202

STEP	VARIABLE ENTERED	VARIABLE REMOVED	F	PROB>F
1	Z3		7.1129	0.0372
2	Z1		4.9044	0.0777

----------SYS=ASN-108----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.11931741	0.11931741	15.24	0.0298
ERROR	3	0.02348470	0.00782823		
TOTAL	4	0.14280211			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-1.91448159				
Z1	-0.09411975	0.02410798	0.11931741	15.24	0.0298

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.8355	0.8355	.

----------SYS=ASQ-133----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	2	0.29373628	0.14686814	40.47	0.0068
ERROR	3	0.01088670	0.00362890		
TOTAL	5	0.30462298			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-0.41860430				
Z2	-0.00317744	0.00084376	0.05146323	14.18	0.0328
Z3	0.00002187	0.00001040	0.01605538	4.42	0.1262

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z2		1	0.9116	0.9116	.
2	Z3		2	0.0527	0.9643	.

STEP	VARIABLE ENTERED	REMOVED	F	PROB>F
1	Z2		41.2264	0.0030
2	Z3		4.4243	0.1262

----------SYS=ASW-32----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.21856871	0.21856871	5.03	0.0883
ERROR	4	0.17379957	0.04344989		
TOTAL	5	0.39236828			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-1.32228292				
Z1	-0.14043494	0.06261459	0.21856871	5.03	0.0883

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.5570	0.5570	.

----------SYS=CP-1035N----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.06927195	0.06927195	10.44	0.0320
ERROR	4	0.02654941	0.00663735		
TOTAL	5	0.09582136			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-2.01397140				
Z5	-0.06879717	0.02129557	0.06927195	10.44	0.0320

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z5		1	0.7229	0.7229	.

----------SYS=JTIDS----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	2	0.24224975	0.12112488	2339.67	0.0004
ERROR	2	0.00010354	0.00005177		
TOTAL	4	0.24235329			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-0.26033430				
Z1	-0.22281625	0.00534897	0.08983223	1735.21	0.0006
Z4	-0.01362598	0.00337039	0.00084616	16.34	0.0561

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9961	0.9961	.
2	Z4		2	0.0035	0.9996	.

STEP	VARIABLE ENTERED	REMOVED	F	PROB>F
1	Z1		762.5651	0.0001
2	Z4		16.3446	0.0561

----------SYS=LANNAV----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	2	0.40055971	0.20027985	64829.71	0.0001
ERROR	4	0.00001236	0.00000309		
TOTAL	6	0.40057206			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	0.64140172				
Z1	-0.11867768	0.00106724	0.03820152	12365.66	0.0001
Z2	-0.00002120	0.00000609	0.00003745	12.12	0.0253

STEP	VARIABLE ENTERED	REMOVED	IN	R**2	R**2	C(P)
1	Z1		1	0.9999	0.9999	122.687
2	Z2		2	0.0001	1.0000	30.181

STEP	VARIABLE ENTERED	REMOVED	F	PROB>F
1	Z1		9999.9999	0.0001
2	Z2		12.1235	0.0253

----------SYS=LANTARP----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	2	0.32598975	0.16299487	99999.99	0.0001
ERROR	4	0.00000612	0.00000153		
TOTAL	6	0.32599587			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	0.43874661				
Z1	-0.10972822	0.00025555	0.28193572	99999.99	0.0001
Z5	0.00009616	0.00000843	0.00019902	130.15	0.0003

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9994	0.9994	71.8489
2	Z5		2	0.0006	1.0000	1.2318

STEP	VARIABLE ENTERED	REMOVED	F	PROB>F
1	Z1		7940.7559	0.0001
2	Z5		130.1470	0.0003

----------SYS=LANTREC----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.14785176	0.14785176	758.78	0.0001
ERROR	3	0.00058456	0.00019485		
TOTAL	4	0.14843632			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-0.34649331				
Z1	-0.14556527	0.00528443	0.14785176	758.78	0.0001

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9961	0.9961	.

C.4.4 - Helicopter Programs

----------SYS=HH-52----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	2	0.13622601	0.06811300	310.10	0.0003
ERROR	3	0.00065894	0.00021965		
TOTAL	5	0.13688495			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	0.04459178				
Z4	0.03816879	0.00639070	0.00783511	35.67	0.0094
Z5	0.14651552	0.00984815	0.04861639	221.34	0.0007

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z5		1	0.9379	0.9379	.
2	Z4		2	0.0572	0.9952	.

STEP	VARIABLE ENTERED	REMOVED	F	PROB>F
1	Z5		60.4616	0.0015
2	Z4		35.6714	0.0094

----------SYS=CH-46----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	2	1.22477069	0.61238534	38.63	0.0009
ERROR	5	0.07925709	0.01585142		
TOTAL	7	1.30402778			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	2.42191179				
Z1	-0.26636196	0.03039306	1.21748489	76.81	0.0003
Z4	-0.03434631	0.01345674	0.10326394	6.51	0.0511

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.8600	0.8600	2.80764
2	Z4		2	0.0792	0.9392	0.95612

STEP	VARIABLE ENTERED	VARIABLE REMOVED	F	PROB>F
1	Z1		36.8672	0.0009
2	Z4		6.5145	0.0511

----------SYS=H-53----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.36413891	0.36413891	56.37	0.0003
ERROR	6	0.03876051	0.00646008		
TOTAL	7	0.40289942			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	2.07266030				
Z1	-0.14183982	0.01889225	0.36413891	56.37	0.0003

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9038	0.9038	-0.67396

----------SYS=CH-47----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	3	0.94598510	0.31532837	24.05	0.0002
ERROR	8	0.10486961	0.01310870		
TOTAL	11	1.05085471			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	1.98150621				
Z1	-0.07590720	0.02686504	0.10465273	7.98	0.0223
Z2	-0.00176284	0.00051800	0.15182170	11.58	0.0093
Z3	0.00000688	0.00000302	0.06788950	5.18	0.0524

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z2		1	0.6285	0.6285	15.0366
2	Z1		2	0.2071	0.8356	4.1956
3	Z3		3	0.0646	0.9002	2.1890

STEP	VARIABLE ENTERED	REMOVED	F	PROB>F
1	Z2		16.9213	0.0021
2	Z1		11.3352	0.0083
3	Z3		5.1790	0.0524

---SYS=H-54---

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.18000333	0.18000333	10.45	0.0481
ERROR	3	0.05167528	0.01722509		
TOTAL	4	0.23167861			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	1.76204133				
Z1	-0.15447484	0.04778574	0.18000333	10.45	0.0481

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.7770	0.7770	.

---SYS=HH-60D---

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.06912153	0.06912153	52.99	0.0184
ERROR	2	0.00260882	0.00130441		
TOTAL	3	0.07173034			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	2.23770674				
Z1	-0.08690880	0.01193889	0.06912153	52.99	0.0184

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9636	0.9636	.

---SYS=SH-3---

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.32143167	0.32143167	24.60	0.0016
ERROR	7	0.09147543	0.01306792		
TOTAL	8	0.41290709			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	1.49416647				
Z1	-0.15806200	0.03187031	0.32143167	24.60	0.0016

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.7785	0.7785	5.71821

C.4.5 - Tactical Armament Programs

----------SYS=LLLGB----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.71772163	0.71772163	3753.30	0.0001
ERROR	8	0.00152979	0.00019122		
TOTAL	9	0.71925142			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-2.51061063				
Z1	-0.17034813	0.00278055	0.71772163	3753.30	0.0001

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9979	0.9979	2.88405

----------SYS=CEM----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	2	2.38507851	1.19253926	529.98	0.0001
ERROR	5	0.01125073	0.00225015		
TOTAL	7	2.39632925			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-1.72144379				
Z1	-0.22764557	0.00726387	2.21000293	982.16	0.0001
Z4	-0.00687050	0.00125462	0.06747828	29.99	0.0028

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9671	0.9671	86.1819
2	Z4		2	0.0282	0.9953	10.8874

STEP	VARIABLE ENTERED	VARIABLE REMOVED	F	PROB>F
1	Z1		176.6261	0.0001
2	Z4		29.9884	0.0028

----------SYS=GBU-15----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	2	0.15959725	0.07979863	27.64	0.0009
ERROR	6	0.01732231	0.00288705		
TOTAL	8	0.17691956			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-1.54399316				
Z2	-0.00037584	0.00005466	0.13651261	47.28	0.0005
Z3	0.00000051	0.00000008	0.11268652	39.03	0.0008

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.5313	0.5313	19.3822
2	Z3		2	0.2023	0.7336	10.8608
3	Z2		3	0.1725	0.9060	3.8875
4		Z1	2	0.0040	0.9021	2.0935

STEP	VARIABLE ENTERED	VARIABLE REMOVED	F	PROB>F
1	Z1		7.9351	0.0259
2	Z3		4.5544	0.0768
3	Z2		9.1799	0.0291
4		Z1	0.2107	0.6655

C.4.6 - Tactical Missile Programs

----------SYS=AMRAAM----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	3.86655114	3.86655114	7317.93	0.0001
ERROR	8	0.00422694	0.00052837		
TOTAL	9	3.87077808			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	1.68243228				
Z1	-0.35610306	0.00416276	3.86655114	7317.93	0.0001

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9989	0.9989	-0.08448

----------SYS=HARM----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	3	2.42365888	0.80788629	609.83	0.0001
ERROR	7	0.00927346	0.00132478		
TOTAL	10	2.43293234			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	0.66544704				
Z1	-0.25136139	0.00654520	1.95386405	1474.86	0.0001
Z4	-0.01712223	0.00377179	0.02730046	20.61	0.0027
Z5	0.00726288	0.00249397	0.01123516	8.48	0.0226

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9848	0.9848	67.2061
2	Z4		2	0.0067	0.9916	36.2519
3	Z5		3	0.0046	0.9962	15.6530

STEP	VARIABLE ENTERED	REMOVED	F	PROB>F
1	Z1		584.5267	0.0001
2	Z4		6.3908	0.0354
3	Z5		8.4808	0.0226

----------SYS=IIR----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	3	2.67262986	0.89087662	155.47	0.0001
ERROR	5	0.02865195	0.00573039		
TOTAL	8	2.70128181			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	0.11061786				
Z1	-0.28493477	0.01447628	2.22004327	387.42	0.0001
Z4	-0.02671880	0.00716121	0.07977098	13.92	0.0136
Z5	0.00404648	0.00218778	0.01960351	3.42	0.1236

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9474	0.9474	13.7801
2	Z4		2	0.0348	0.9821	3.3729
3	Z5		3	0.0073	0.9894	2.7839

STEP	VARIABLE ENTERED	REMOVED	F	PROB>F
1	Z1		125.9713	0.0001
2	Z4		11.6813	0.0142
3	Z5		3.4210	0.1236

----------SYS=AIM7F-R----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	2	3.45875409	1.72937705	535.29	0.0001
ERROR	5	0.01615374	0.00323075		
TOTAL	7	3.47490783			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	1.23402235				
Z1	-0.41251857	0.01376895	2.89993692	897.61	0.0001
Z4	-0.01447367	0.00614091	0.01794711	5.56	0.0650

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9902	0.9902	1073.29
2	Z4		2	0.0052	0.9954	508.32

STEP	VARIABLE ENTERED	REMOVED	F	PROB>F
1	Z1		605.4055	0.0001
2	Z4		5.5551	0.0650

----------SYS=AIM7F-GD----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	4.95424289	4.95424289	237.69	0.0001
ERROR	4	0.08337301	0.02084325		
TOTAL	5	5.03761591			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	1.04508899				
Z1	-0.46191702	0.02996112	4.95424289	237.69	0.0001

	VARIABLE		NUMBER	PARTIAL	MODEL	
STEP	ENTERED	REMOVED	IN	R**2	R**2	C(P)
1	Z1		1	0.9834	0.9834	.

C.5 - Modified Alternative Three Stepwise Regression

This section contains the summary results produced by the stepwise regression procedure in SAS. The SAS program used to produce this run was discussed in Appendix B.5.

C.5.1 - Bomber Aircraft Programs

----------SYS=B-1B----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	1.47808272	1.47808272	1837.90	0.0001
ERROR	3	0.00241268	0.00080423		
TOTAL	4	1.48049540			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	6.06180789				
Z1	-0.31029881	0.00723802	1.47808272	1837.90	0.0001

	VARIABLE		NUMBER	PARTIAL	MODEL	
STEP	ENTERED	REMOVED	IN	R**2	R**2	C(P)
1	Z1		1	0.9984	0.9984	1.83156

----------SYS=B-52----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.98951441	0.98951441	10.54	0.0118
ERROR	8	0.75101711	0.09387714		
TOTAL	9	1.74053152			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	4.66879195				
Z1	-0.21690646	0.06680998	0.98951441	10.54	0.0118

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.5685	0.5685	0.54747

----------SYS=B-58----------

NO VARIABLES MET THE 0.1500 SIGNIFICANCE LEVEL FOR ENTRY INTO THE MODEL.

C.5.2 - Fighter Aircraft Programs

----------SYS=A-10----------

NO VARIABLES MET THE 0.1500 SIGNIFICANCE LEVEL FOR ENTRY INTO THE MODEL.

----------SYS=F-100----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.51333658	0.51333658	95.15	0.0023
ERROR	3	0.01618481	0.00539494		
TOTAL	4	0.52952138			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	2.18648143				
Z1	-0.15830979	0.01622930	0.51333658	95.15	0.0023

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9694	0.9694	0.46928

----------SYS=F-101----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.92472428	0.92472428	69.59	0.0011
ERROR	4	0.05315185	0.01328796		
TOTAL	5	0.97787613			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	3.32628329				
Z1	-0.25635237	0.03072985	0.92472428	69.59	0.0011

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9456	0.9456	0.75666

----------SYS=F-102----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	1.45937506	1.45937506	94.06	0.0105
ERROR	2	0.03103201	0.01551601		
TOTAL	3	1.49040707			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	3.39652787				
Z1	-0.37709990	0.03888328	1.45937506	94.06	0.0105

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9792	0.9792	.

----------SYS=F-106----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	1.19964727	1.19964727	30.66	0.0311
ERROR	2	0.07824803	0.03912402		
TOTAL	3	1.27789530			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	4.79595764				
Z1	-0.49884822	0.09008726	1.19964727	30.66	0.0311

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9388	0.9388	.

----------SYS=F-15AB----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.15260233	0.15260233	146.05	0.0003
ERROR	4	0.00417943	0.00104486		
TOTAL	5	0.15678176			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	3.52762254				
Z1	-0.13148161	0.01087959	0.15260233	146.05	0.0003

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9733	0.9733	1.13109

----------SYS=F-15CD----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.06145850	0.06145850	6.27	0.0463
ERROR	6	0.05879520	0.00979920		
TOTAL	7	0.12025370			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	2.60679451				
Z2	0.06093005	0.02432965	0.06145850	6.27	0.0463

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z2		1	0.5111	0.5111	1.13138

----------SYS=F-15E----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.03274593	0.03274593	9.57	0.0364
ERROR	4	0.01368315	0.00342079		
TOTAL	5	0.04642908			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	3.23492940				
Z1	-0.06959951	0.02249524	0.03274593	9.57	0.0364

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.7053	0.7053	0.30402

----------SYS=F-16AB----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.28836638	0.28836638	10.64	0.0471
ERROR	3	0.08130971	0.02710324		
TOTAL	4	0.36967609			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	3.18677898				
Z1	-0.22828275	0.06998603	0.28836638	10.64	0.0471

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.7801	0.7801	0.53015

----------SYS=F-16E----------

NO VARIABLES MET THE 0.1500 SIGNIFICANCE LEVEL FOR ENTRY INTO THE MODEL.

C.5.3 - Electronics Programs

----------SYS=ARC-109V----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.16351455	0.16351455	14.23	0.0326
ERROR	3	0.03446990	0.01148997		
TOTAL	4	0.19798445			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-2.99345507				
Z1	-0.09510960	0.02521190	0.16351455	14.23	0.0326

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.8259	0.8259	0.42312

----------SYS=ARC-54----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.11782452	0.11782452	69.37	0.0004
ERROR	5	0.00849241	0.00169848		
TOTAL	6	0.12631693			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-3.18672110				
Z1	-0.12274020	0.01473668	0.11782452	69.37	0.0004

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9328	0.9328	1.08414

----------SYS=ASN-63----------

NO VARIABLES MET THE 0.1500 SIGNIFICANCE LEVEL FOR ENTRY INTO THE MODEL.

----------SYS=ASN-70----------

NO VARIABLES MET THE 0.1500 SIGNIFICANCE LEVEL FOR ENTRY INTO THE MODEL.

----------SYS=ASN-99----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.10319665	0.10319665	2.86	0.1419
ERROR	6	0.21670613	0.03611769		
TOTAL	7	0.31990278			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-3.71223305				
Z1	0.12221795	0.07230398	0.10319665	2.86	0.1419

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.3226	0.3226	1.03675

----------SYS=ASN-108----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.11931741	0.11931741	15.24	0.0298
ERROR	3	0.02348470	0.00782823		
TOTAL	4	0.14280211			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-1.91448159				
Z1	-0.09411975	0.02410798	0.11931741	15.24	0.0298

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.8355	0.8355	0.14936

----------SYS=ASQ-133----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.27102133	0.27102133	32.26	0.0047
ERROR	4	0.03360165	0.00840041		
TOTAL	5	0.30462298			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-0.21450800				
Z1	-0.15053337	0.02650217	0.27102133	32.26	0.0047

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.8897	0.8897	0.55358

----------SYS=ASW-32----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.21856871	0.21856871	5.03	0.0883
ERROR	4	0.17379957	0.04344989		
TOTAL	5	0.39236828			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-1.32228292				
Z1	-0.14043494	0.06261459	0.21856871	5.03	0.0883

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.5570	0.5570	1.61839

----------SYS=CP-1035N----------

NO VARIABLES MET THE 0.1500 SIGNIFICANCE LEVEL FOR ENTRY INTO THE MODEL.

----------SYS=JTIDS----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	2	0.24230245	0.12115122	4765.46	0.0002
ERROR	2	0.00005085	0.00002542		
TOTAL	4	0.24235329			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-0.33479724				
Z1	-0.19895651	0.00232942	0.18545801	7294.95	0.0001
Z2	-0.00975694	0.00164089	0.00089886	35.36	0.0271

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9961	0.9961	22.4416
2	Z2		2	0.0037	0.9998	2.2550

STEP	VARIABLE ENTERED	VARIABLE REMOVED	F	PROB>F
1	Z1		762.5651	0.0001
2	Z2		35.3564	0.0271

----------SYS=LANNAV----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.40052225	0.40052225	40204.49	0.0001
ERROR	5	0.00004981	0.00000996		
TOTAL	6	0.40057206			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	0.64554446				
Z1	-0.12220077	0.00060945	0.40052225	40204.49	0.0001

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9999	0.9999	2.87387

----------SYS=LANTARP----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	2	0.32598953	0.16299476	99999.99	0.0001
ERROR	4	0.00000634	0.00000158		
TOTAL	6	0.32599587			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	0.43865929				
Z1	-0.10981132	0.00025772	0.28774799	99999.99	0.0001
Z3	0.00007521	0.00000672	0.00019880	125.43	0.0004

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9994	0.9994	101.398
2	Z3		2	0.0006	1.0000	2.226

STEP	VARIABLE ENTERED	VARIABLE REMOVED	F	PROB>F
1	Z1		7940.7559	0.0001
2	Z3		125.4327	0.0004

----------SYS=LANTREC----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.14785176	0.14785176	758.78	0.0001
ERROR	3	0.00058456	0.00019485		
TOTAL	4	0.14843632			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-0.34649331				
Z1	-0.14556527	0.00528443	0.14785176	758.78	0.0001

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9961	0.9961	1.36336

C.5.4 - Helicopter Programs

----------SYS=HH-52----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.12412828	0.12412828	38.92	0.0034
ERROR	4	0.01275667	0.00318917		
TOTAL	5	0.13688495			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	0.83324089				
Z1	-0.18605919	0.02982321	0.12412828	38.92	0.0034

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9068	0.9068	2.22061

----------SYS=CH-46----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	2	1.23047248	0.61523624	41.82	0.0008
ERROR	5	0.07355530	0.01471106		
TOTAL	7	1.30402778			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	2.36868024				
Z1	-0.22350402	0.02780654	0.95043149	64.61	0.0005
Z2	-0.03351173	0.01231329	0.10896573	7.41	0.0417

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.8600	0.8600	7.07423
2	Z2		2	0.0836	0.9436	2.46287

STEP	VARIABLE ENTERED	VARIABLE REMOVED	F	PROB>F
1	Z1		36.8672	0.0009
2	Z2		7.4071	0.0417

----------SYS=H-53----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.36413891	0.36413891	56.37	0.0003
ERROR	6	0.03876051	0.00646008		
TOTAL	7	0.40289942			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	2.07266030				
Z1	-0.14183982	0.01889225	0.36413891	56.37	0.0003

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9038	0.9038	0.07011

----------SYS=CH-47----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	2	0.69121174	0.34560587	8.65	0.0080
ERROR	9	0.35964297	0.03996033		
TOTAL	11	1.05085471			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	2.12140343				
Z1	-0.13334229	0.04047426	0.43371767	10.85	0.0093
Z2	-0.03107691	0.01625348	0.14608719	3.66	0.0882

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.5187	0.5187	3.30915
2	Z2		2	0.1390	0.6578	2.04234

STEP	VARIABLE ENTERED	REMOVED	F	PROB>F
1	Z1		10.7790	0.0082
2	Z2		3.6558	0.0882

----------SYS=H-54----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.18000333	0.18000333	10.45	0.0481
ERROR	3	0.05167528	0.01722509		
TOTAL	4	0.23167861			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	1.76204133				
Z1	-0.15447484	0.04778574	0.18000333	10.45	0.0481

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.7770	0.7770	1.11535

----------SYS=HH-60D----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.06912153	0.06912153	52.99	0.0184
ERROR	2	0.00260882	0.00130441		
TOTAL	3	0.07173034			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	2.23770674				
Z1	-0.08690880	0.01193889	0.06912153	52.99	0.0184

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9636	0.9636	.

----------SYS=SH-3----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.32143167	0.32143167	24.60	0.0016
ERROR	7	0.09147543	0.01306792		
TOTAL	8	0.41290709			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	1.49416647				
Z1	-0.15806200	0.03187031	0.32143167	24.60	0.0016

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.7785	0.7785	1.19459

C.5.5 - Tactical Armament Programs

----------SYS=LLLGB----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.71772163	0.71772163	3753.30	0.0001
ERROR	8	0.00152979	0.00019122		
TOTAL	9	0.71925142			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-2.51061063				
Z1	-0.17034813	0.00278055	0.71772163	3753.30	0.0001

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9979	0.9979	0.61282

----------SYS=CEM----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	2	2.38510832	1.19255416	531.40	0.0001
ERROR	5	0.01122093	0.00224419		
TOTAL	7	2.39632925			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-1.76338250				
Z1	-0.21757597	0.00667579	2.38382773	1062.22	0.0001
Z2	-0.00646602	0.00117893	0.06750808	30.08	0.0027

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9671	0.9671	28.6780
2	Z2		2	0.0282	0.9953	2.6575

STEP	VARIABLE ENTERED	REMOVED	F	PROB>F
1	Z1		176.6261	0.0001
2	Z2		30.0813	0.0027

----------SYS=GBU-15----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	0.09399839	0.09399839	7.94	0.0259
ERROR	7	0.08292118	0.01184588		
TOTAL	8	0.17691956			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-1.47118132				
Z1	-0.05988187	0.02125783	0.09399839	7.94	0.0259

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.5313	0.5313	3.52993

C.5.6 - Tactical Missile Programs

----------SYS=AMRAAM----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	3.86655114	3.86655114	7317.93	0.0001
ERROR	8	0.00422694	0.00052837		
TOTAL	9	3.87077808			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	1.68243228				
Z1	-0.35610306	0.00416276	3.86655114	7317.93	0.0001

STEP	VARIABLE ENTERED	REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9989	0.9989	0.84349

----------SYS=HARM----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	3	2.42228052	0.80742684	530.61	0.0001
ERROR	7	0.01065182	0.00152169		
TOTAL	10	2.43293234			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	0.62374635				
Z1	-0.22324962	0.00822781	1.12031155	736.23	0.0001
Z2	-0.03103104	0.00869326	0.01938890	12.74	0.0091
Z3	0.00746506	0.00267922	0.01181338	7.76	0.0271

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9848	0.9848	17.2441
2	Z2		2	0.0059	0.9908	9.7633
3	Z3		3	0.0049	0.9956	4.0000

STEP	VARIABLE ENTERED	VARIABLE REMOVED	F	PROB>F
1	Z1		584.5267	0.0001
2	Z2		5.1375	0.0532
3	Z3		7.7633	0.0271

----------SYS=IIR----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	3	2.67373327	0.89124442	161.76	0.0001
ERROR	5	0.02754854	0.00550971		
TOTAL	8	2.70128181			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	-0.04615566				
Z1	-0.24109761	0.01474557	1.47296206	267.34	0.0001
Z2	-0.03307276	0.01047234	0.05495179	9.97	0.0251
Z3	0.00422128	0.00216844	0.02087968	3.79	0.1091

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9474	0.9474	20.8096
2	Z2		2	0.0347	0.9821	5.7896
3	Z3		3	0.0077	0.9898	4.0000

STEP	VARIABLE ENTERED	VARIABLE REMOVED	F	PROB>F
1	Z1		125.9713	0.0001
2	Z2		11.6183	0.0143
3	Z3		3.7896	0.1091

----------SYS=AIM7F-R----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	2	3.45535635	1.72767817	441.83	0.0001
ERROR	5	0.01955148	0.00391030		
TOTAL	7	3.47490783			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	1.15179091				
Z1	-0.39169935	0.01371427	3.18984571	815.76	0.0001
Z2	-0.01126437	0.00583969	0.01454937	3.72	0.1116

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9902	0.9902	2.97887
2	Z2		2	0.0042	0.9944	2.00129

STEP	VARIABLE ENTERED	VARIABLE REMOVED	F	PROB>F
1	Z1		605.4055	0.0001
2	Z2		3.7208	0.1116

----------SYS=AIM7F-GD----------

	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB>F
REGRESSION	1	4.95424289	4.95424289	237.69	0.0001
ERROR	4	0.08337301	0.02084325		
TOTAL	5	5.03761591			

	B VALUE	STD ERROR	TYPE II SS	F	PROB>F
INTERCEPT	1.04508899				
Z1	-0.46191702	0.02996112	4.95424289	237.69	0.0001

STEP	VARIABLE ENTERED	VARIABLE REMOVED	NUMBER IN	PARTIAL R**2	MODEL R**2	C(P)
1	Z1		1	0.9834	0.9834	2.19307

C.6 - Modified Alternative One Non-linear Regression

This section contains the summary results produced by the non-linear regression procedure in SAS. The SAS program used to produce this run was discussed in Appendix B.6.

C.6.1 - Bomber Aircraft Programs

---------- SYS=B-1B ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	5	59477976.810	11895595.362
RESIDUAL	0	0.000	0.000
UNCORRECTED TOTAL	5	59477976.810	
(CORRECTED TOTAL)	4	17234615.032	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	471.1154679	0	471.11546791	471.11546791
B	-0.1207258	0	-0.12072576	-0.12072576
C	-1.2592530	0	-1.25925304	-1.25925304
D	0.0172283	0	0.01722827	0.01722827
E	-0.0016723	0	-0.00167231	-0.00167231

LOT	XL	XU	YI	R	AUC	UCP	DIF	PCT
1	0	1	1	1.00000	535.8	535.8	0	0
2	1	8	7	7.00000	260.3	260.3	7.10543E-15	2.72971E-15
3	8	18	10	1.42857	200.5	200.5	2.13163E-14	1.06316E-14
4	18	52	34	3.40000	142.0	142.0	3.55271E-15	2.50191E-15
5	52	100	48	1.41176	111.3	111.3	8.88178E-15	7.98004E-15

---------- SYS=B-52 ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	5	70187964.335	14037592.867
RESIDUAL	5	2212807.575	442561.515
UNCORRECTED TOTAL	10	72400771.910	
(CORRECTED TOTAL)	9	18070289.989	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	155.4216043	105.28218225	-115.21093838	426.05414705
B	-0.1979825	0.13252609	-0.53864674	0.14268169
C	-1.0896503	0.30249679	-1.86723175	-0.31206879
D	-0.0093222	0.12358501	-0.32700295	0.30835858
E	-0.0044413	0.03322792	-0.08985512	0.08097256

LOT	XL	XU	YI	R	AUC	UCP	DIF	PCT
1	0	20	20	1.00000	112.5	78.5601	33.940	30.169
2	20	63	43	2.15000	37.0	46.0826	-9.083	-24.548
3	63	88	25	0.58140	28.6	48.4378	-19.838	-69.363
4	88	165	77	3.08000	32.3	29.7992	2.501	7.742
5	165	298	133	1.72727	23.4	29.6541	-6.254	-26.727
6	298	500	202	1.51880	28.4	25.9869	2.413	8.497
7	500	601	101	0.50000	27.3	28.6932	-1.393	-5.103
8	601	640	39	0.38614	27.3	30.8457	-3.546	-12.988
9	640	702	62	1.58974	35.4	26.5789	8.821	24.918
10	702	742	40	0.64516	35.0	29.4688	5.531	15.803

---------- SYS=B-58 ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	4	14238328.874	3559582.219
RESIDUAL	0	0.000	0.000
UNCORRECTED TOTAL	4	14238328.874	
(CORRECTED TOTAL)	3	1830393.074	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	16.66546663	0	16.665466631	16.665466631
B	-0.37971504	0	-0.379715043	-0.379715043
C	0.41794575	0	0.417945749	0.417945749
D	-0.87300949	0	-0.873009490	-0.873009490
E	0.27629059	0	0.276290593	0.276290593

LOT	XL	XU	YI	R	AUC	UCP	DIF	PCT
1	0	17	17	1.00000	93.86	93.86	1.77636E-15	1.89256E-15
2	17	53	36	2.11765	80.26	80.26	1.77636E-15	2.21325E-15
3	53	73	20	0.55556	73.16	73.16	1.77636E-15	2.42804E-15
4	73	103	30	1.50000	36.56	36.56	8.88178E-16	2.42937E-15

C.6.2 - Fighter Aircraft Programs

---------- SYS=A-10 ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	5	5178580.2874	1035716.0575
RESIDUAL	4	8637.0970	2159.2743
UNCORRECTED TOTAL	9	5187217.3844	
(CORRECTED TOTAL)	8	1226666.3049	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	21.23601132	5.1507658640	6.9353861501	35.536636497
B	0.05164370	0.0657715049	-0.1309648049	0.234252199
C	-1.27892455	0.1135469836	-1.5941772476	-0.963671845
D	0.01528574	0.0422549676	-0.1020312726	0.132602749
E	-0.00239225	0.0066442251	-0.0208393265	0.016054827

LOT	XL	XU	YI	R	AUC	UCP	DIF	PCT
1	0	22	22	1.00000	12.37	10.4089	1.9611	15.853
2	22	75	53	2.40909	9.16	9.3665	-0.2065	-2.255
3	75	95	20	0.37736	8.20	11.7717	-3.5717	-43.557
4	95	195	100	5.00000	8.20	8.1970	0.0030	0.037
5	195	339	144	1.44000	7.82	7.7074	0.1126	1.440
6	339	483	144	1.00000	7.59	7.7225	-0.1325	-1.746
7	483	627	144	1.00000	7.82	7.8442	-0.0242	-0.309
8	627	687	60	0.41667	10.18	9.7094	0.4706	4.623
9	687	707	20	0.33333	13.64	13.1009	0.5391	3.952

---------- SYS=F-100 ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	5	11835640.869	2367128.174
RESIDUAL	0	0.000	0.000
UNCORRECTED TOTAL	5	11835640.869	
(CORRECTED TOTAL)	4	2086478.767	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	3.957000040	0	3.9570000399	3.9570000399
B	-0.384653773	0	-0.3846537734	-0.3846537734
C	-0.347876734	0	-0.3478767340	-0.3478767340
D	-0.274517676	0	-0.2745176759	-0.2745176759
E	0.010967897	0	0.0109678971	0.0109678971

LOT	XL	XU	YI	R	AUC	UCP	DIF	PCT
1	0	23	23	1.0000	6.51	6.51	3.33067E-16	5.11624E-15
2	23	568	545	23.6957	3.45	3.45	-2.22045E-16	-6.43608E-15
3	568	1161	593	1.0881	3.08	3.08	-3.88578E-16	-1.26162E-14
4	1161	1720	559	0.9427	3.10	3.10	3.33067E-16	1.07441E-14
5	1720	2277	557	0.9964	2.50	2.50	-5.55112E-17	-2.22045E-15

---------- SYS=F-101 ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	5	7068239.3652	1413647.8730
RESIDUAL	1	8620.4794	8620.4794
UNCORRECTED TOTAL	6	7076859.8446	
(CORRECTED TOTAL)	5	2200718.4643	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	30.11407700	16.917997226	-184.84599576	245.07414975
B	-0.28262118	0.079536471	-1.29321158	0.72796922
C	-0.92075123	0.162521380	-2.98574789	1.14424543
D	-0.10127519	0.079440492	-1.11064608	0.90809571
E	0.02276889	0.018622788	-0.21385225	0.25939004

LOT	XL	XU	YI	R	AUC	UCP	DIF	PCT
1	0	31	31	1.00000	16.85	15.9455	0.90452	5.3681
2	31	115	84	2.70968	7.58	8.0942	-0.51421	-6.7838
3	115	424	309	3.67857	6.91	6.8948	0.01517	0.2196
4	424	630	206	0.66667	5.76	5.7691	-0.00906	-0.1574
5	630	714	84	0.40777	5.27	5.7559	-0.48590	-9.2201
6	714	807	93	1.10714	5.22	4.5168	0.70322	13.4717

---------- SYS=F-102 ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	4	4462706.4660	1115676.6165
RESIDUAL	0	0.0000	0.0000
UNCORRECTED TOTAL	4	4462706.4660	
(CORRECTED TOTAL)	3	1795723.5179	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	2.912427078	0	2.9124270782	2.9124270782
B	-0.590430858	0	-0.5904308580	-0.5904308580
C	-0.258038597	0	-0.2580385966	-0.2580385966
D	-0.010553539	0	-0.0105535395	-0.0105535395
E	-0.003937765	0	-0.0039377645	-0.0039377645

LOT	XL	XU	YI	R	AUC	UCP	DIF	PCT
1	0	37	37	1.00000	11.66	11.66	-2.22045E-16	-1.90433E-15
2	37	145	108	2.91892	5.17	5.17	2.22045E-16	4.29487E-15
3	145	707	562	5.20370	3.50	3.50	-1.11022E-16	-3.17207E-15
4	707	847	140	0.24911	2.21	2.21	2.77556E-16	1.25591E-14

---------- SYS=F-106 ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	4	4765078.8733	1191269.7183
RESIDUAL	0	0.0000	0.0000

UNCORRECTED TOTAL	4	4765078.8733
(CORRECTED TOTAL)	3	480903.3427

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	8.705994979	0	8.7059949788	8.7059949788
B	-0.538191590	0	-0.5381915901	-0.5381915901
C	-0.100069618	0	-0.1000696176	-0.1000696176
D	-0.243108557	0	-0.2431085572	-0.2431085572
E	0.040672324	0	0.0406723237	0.0406723237

LOT	XL	XU	YI	R	AUC	UCP	DIF	PCT
1	0	4.	42	1.00000	34.19	34.19	8.88178E-16	2.59777E-15
2	42	130	88	2.09524	10.54	10.54	-8.88178E-16	-8.42674E-15
3	130	175	45	0.51136	11.64	11.64	-4.44089E-16	-3.81520E-15
4	175	340	165	3.66667	7.59	7.59	0	0

---------- SYS=F-15AB ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	5	10242798.539	2048559.708
RESIDUAL	1	4843.520	4843.520
UNCORRECTED TOTAL	6	10247642.059	
(CORRECTED TOTAL)	5	1585918.021	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	28.40889477	12.214770553	-126.79197987	183.60976942
B	-0.14928381	0.065766639	-0.98491473	0.68634711
C	-0.93147080	0.196329082	-3.42602811	1.56308652
D	-0.00877048	0.047709730	-0.61497030	0.59742934
E	0.00190393	0.008225191	-0.10260534	0.10641320

LOT	XL	XU	YI	R	AUC	UCP	DIF	PCT
1	0	30	30	1.00000	25.597	24.7881	0.80894	3.1603
2	30	92	62	2.06667	19.556	19.7410	-0.18500	-0.9460
3	92	164	72	1.16129	17.183	17.9070	-0.72405	-4.2137
4	164	272	108	1.50000	17.126	16.8441	0.28194	1.6462
5	272	296	24	0.22222	16.021	15.1099	0.91114	5.6872
6	296	404	108	4.50000	16.272	16.2726	-0.00061	-0.0038

---------- SYS=F-15CD ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	5	8408519.8857	1681703.9771
RESIDUAL	3	10329.2606	3443.0869
UNCORRECTED TOTAL	8	8418849.1462	
(CORRECTED TOTAL)	7	752208.0946	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	118.4565394	122.25912839	-270.63313672	507.54621551
B	-0.0754078	0.07643225	-0.31865340	0.16783788
C	-1.4984221	0.19017008	-2.10363834	-0.89320578
D	0.1672946	0.46833405	-1.32317855	1.65776766
E	-0.0319244	0.23019699	-0.76452637	0.70067749

LOT	XL	XU	YI	R	AUC	UCP	DIF	PCT
1	0	97	97	1.00000	17.249	17.2381	0.0109	0.0632
2	97	175	78	0.80412	15.588	15.3315	0.2565	1.6455
3	175	235	60	0.76923	15.508	16.1558	-0.6478	-4.1773
4	235	277	42	0.70000	17.665	17.6862	-0.0212	-0.1202
5	277	313	36	0.85714	19.943	19.8749	0.0681	0.3413
6	313	352	39	1.08333	19.308	20.8517	-1.5437	-7.9949
7	352	388	36	0.92308	21.954	20.0546	1.8994	8.6517
8	388	436	48	1.33333	21.017	20.7982	0.2188	1.0409

---------- SYS=F-15E ----------

NOTE: THE RESIDUAL SS HAS FAILED TO CONVERGE IN THE SPECIFIED NUMBER OF ITERATIONS.

LOT	XL	XU	YI	R	AUC	UCP	DIF	PCT
1	0	60	60	1.00000	20.544	.	.	.
2	60	132	72	1.20000	19.203	.	.	.
3	132	228	96	1.33333	17.608	.	.	.
4	228	324	96	1.00000	16.175	.	.	.
5	324	420	96	1.00000	16.041	.	.	.
6	420	516	96	1.00000	17.927	.	.	.

---------- SYS=F-16AB ----------

NOTE: THE RESIDUAL SS HAS FAILED TO CONVERGE IN THE SPECIFIED NUMBER OF ITERATIONS.

LOT	XL	XU	YI	R	AUC	UCP	DIF	PCT
1	0	105	105	1.00000	10.14	.	.	.
2	105	250	145	1.38095	7.74	.	.	.
3	250	425	175	1.20690	8.04	.	.	.
4	425	605	180	1.02857	5.05	.	.	.
5	605	725	120	0.66667	5.13	.	.	.

---------- SYS=F-16E ----------

NOTE: THE RESIDUAL SS HAS FAILED TO CONVERGE IN THE SPECIFIED NUMBER OF ITERATIONS.

LOT	XL	XU	YI	R	AUC	UCP	DIF	PCT
1	0	120	120	1.00000	9.86	.	.	.
2	120	264	144	1.20000	10.58	.	.	.
3	264	414	150	1.04167	14.55	.	.	.
4	414	630	216	1.44000	11.93	.	.	.
5	630	846	216	1.00000	11.28	.	.	.
6	846	1062	216	1.00000	11.02	.	.	.
7	1062	1278	216	1.00000	10.88	.	.	.
8	1278	1494	216	1.00000	10.69	.	.	.
9	1494	1710	216	1.00000	10.61	.	.	.
10	1710	1926	216	1.00000	10.54	.	.	.

C.6.3 - Electronics Programs

---------- SYS=ARC-109V ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	5	66.744073730	13.348814746
RESIDUAL	0	0.000000000	0.000000000
UNCORRECTED TOTAL	5	66.744073730	
(CORRECTED TOTAL)	4	29.010182832	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR		ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	0.0146272785		0	0.01462727850	0.01462727850
B	-.5732392562		0	-.57323925617	-.57323925617
C	-.0544552721		0	-.05445527211	-.05445527211
D	-.1365562160		0	-.13655621600	-.13655621600
E	0.0180417909		0	0.01804179095	0.01804179095

LOT	XL	XU	YI	R	AUC	UCP	DIF	PCT
1	0	4	4	1.00000	0.0487	0.0487	0	0
2	4	28	24	6.00000	0.0393	0.0393	-8.67362E-19	-2.20703E-15
3	28	107	79	3.29167	0.0285	0.0285	-3.03577E-18	-1.06518E-14
4	107	333	226	2.86076	0.0313	0.0313	8.67362E-19	2.77112E-15
5	333	441	108	0.47788	0.0303	0.0303	-5.20417E-18	-1.71755E-14

---------- SYS=ARC-54 ----------

ERROR: ON OBSERVATION 6, USE OF THE ABOVE PARAMETERS HAS RESULTED IN A DERIVATIVE OR RESIDUAL IN EXCESS OF 1E30. ITERATIONS TERMINATED.

LOT	XL	XU	YI	R	AUC	UCP	DIF	PCT
1	0	900	900	1.0000	0.0210	.	.	.
2	900	1753	853	0.9478	0.0165	.	.	.
3	1753	3134	1381	1.6190	0.0164	.	.	.
4	3134	4294	1160	0.8400	0.0145	.	.	.
5	4294	4594	300	0.2586	0.0144	.	.	.
6	4594	7697	3103	10.3433	0.0139	.	.	.
7	7697	10347	2650	0.8540	0.0143	.	.	.

---------- SYS=ASN-63 ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	5	27730.837094	5546.167419
RESIDUAL	5	11.127902	2.225580
UNCORRECTED TOTAL	10	27741.964996	
(CORRECTED TOTAL)	9	14794.094157	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	0.678269504	0.93091584111	-1.7146911636	3.0712301721
B	-0.088463668	0.11590072096	-0.3863916377	0.2094643019
C	-1.173255343	0.12203697556	-1.4869568287	-0.8595538571
D	0.086542728	0.02866133425	0.0128674909	0.1602179656
E	-0.032473882	0.01069228110	-0.0599588677	-0.0049888972

LOT	XL	XU	YI	R	AUC	UCP	DIF	PCT
1	0	781	781	1.00000	0.1866	0.186625	-0.000025	-0.013
2	781	930	149	0.19078	0.1744	0.169378	0.005022	2.880
3	930	1217	287	1.92617	0.1769	0.178303	-0.001403	-0.793
4	1217	1358	141	0.49129	0.1817	0.181340	0.000360	0.198
5	1358	1450	92	0.65248	0.1772	0.197918	-0.020718	-11.692
6	1450	1585	135	1.46739	0.2189	0.200671	0.018229	8.328
7	1585	1693	108	0.80000	0.1911	0.196452	-0.005352	-2.801
8	1693	1851	158	1.46296	0.1917	0.194390	-0.002690	-1.403
9	1851	1887	36	0.22785	0.2005	0.199715	0.000785	0.391
10	1887	1923	36	1.00000	0.2145	0.226862	-0.012362	-5.763

---------- SYS=ASN-70 ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	5	119.45451746	23.89090349
RESIDUAL	3	0.00148135	0.00049378
UNCORRECTED TOTAL	8	119.45599881	
(CORRECTED TOTAL)	7	64.18968336	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	0.049631948	0.00597388760	0.0306200504	0.0686438449
B	-0.011493359	0.01080449650	-0.0458786693	0.0228919509
C	-1.072124923	0.01310544926	-1.1138330156	-1.0304168310
D	0.009279370	0.01736852532	-0.0459959622	0.0645547015
E	0.002507962	0.00889961684	-0.0258150685	0.0308309927

LOT	XL	XU	YI	R	AUC	UCP	DIF	PCT
1	0	152	152	1.00000	0.0350	0.0349992	0.0000008	0.0024
2	152	402	250	1.64474	0.0353	0.0353010	-0.0000010	-0.0029
3	402	483	81	0.32400	0.0342	0.0341939	0.0000061	0.0178
4	483	541	58	0.71605	0.0356	0.0355978	0.0000022	0.0062
5	541	567	26	0.44828	0.0370	0.0370488	-0.0000488	-0.1318
6	567	575	8	0.30769	0.0399	0.0399702	-0.0000702	-0.1759
7	575	583	8	1.00000	0.0370	0.0406929	-0.0036929	-9.9808
8	583	594	11	1.37500	0.0427	0.0404615	0.0022385	5.2423

---------- SYS=ASN-99 ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	5	382.29426152	76.45885230
RESIDUAL	3	1.30934762	0.43644921
UNCORRECTED TOTAL	8	383.60360914	
(CORRECTED TOTAL)	7	61.21154176	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	0.413208936	0.30040695637	-0.5428362023	1.3692540750
B	0.010252534	0.04673986871	-0.1384970983	0.1590021660
C	-1.612154656	0.17608325011	-2.1725395990	-1.0517697121
D	0.210809029	0.09457908697	-0.0901889155	0.5118069731
E	-0.052418074	0.02728520774	-0.1392532474	0.0344170999

LOT	XL	XU	YI	R	AUC	UCP	DIF	PCT
1	0	157	157	1.00000	0.0464	0.0434344	0.002966	6.391
2	157	353	196	1.24841	0.0404	0.0450313	-0.004631	-11.464
3	353	538	185	0.94388	0.0413	0.0398728	0.001427	3.456
4	538	781	243	1.31351	0.0433	0.0426104	0.000690	1.593
5	781	805	24	0.09877	0.0570	0.0674564	-0.010456	-18.344
6	805	877	72	3.00000	0.0624	0.0642077	-0.001808	-2.897
7	877	933	56	0.77778	0.0635	0.0641983	-0.000698	-1.100
8	933	1050	117	2.08929	0.0684	0.0658455	0.002555	3.735

---------- SYS=ASN-108 ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	5	560.63059524	112.12611905
RESIDUAL	0	0.00000000	0.00000000
UNCORRECTED TOTAL	5	560.63059524	
(CORRECTED TOTAL)	4	226.66710333	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	0.0580075009	0	0.05800750093	0.05800750093
B	-.4176390214	0	-.41763902135	-.41763902135
C	-.3241819744	0	-.32418197435	-.32418197435
D	-.1278505557	0	-.12785055570	-.12785055570
E	0.0240188462	0	0.02401884625	0.02401884625

LOT	XL	XU	YI	R	AUC	UCP	DIF	PCT
1	0	8	8	1.00000	0.1373	0.1373	0	0
2	8	39	31	3.87500	0.1048	0.1048	-1.73472E-18	-1.65527E-15
3	39	116	77	2.48387	0.0874	0.0874	5.20417E-18	5.95443E-15
4	116	332	216	2.80519	0.0943	0.0943	3.46945E-18	3.67916E-15
5	332	440	108	0.50000	0.0872	0.0872	8.67362E-18	9.94681E-15

---------- SYS=ASQ-133 ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	5	2882.9126662	576.5825332
RESIDUAL	1	1.8574302	1.8574302
UNCORRECTED TOTAL	6	2884.7700964	
(CORRECTED TOTAL)	5	403.6845454	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	1.127610498	0.44461074506	-4.5216136290	6.7768346244
B	-0.085916155	0.10070611805	-1.3654880914	1.1936557805
C	-1.216524781	0.25099184938	-4.4056272195	1.9725776571
D	0.065720464	0.08665592678	-1.0353297421	1.1667706694
E	-0.012889515	0.01765299431	-0.2371884612	0.2114094302

LOT	XL	XU	YI	R	AUC	UCP	DIF	PCT
1	0	14	14	1.00000	0.5856	0.638393	-0.052793	-9.0152
2	14	33	19	1.35714	0.5862	0.552513	0.033687	5.7467
3	33	101	68	3.57895	0.4255	0.425465	0.000035	0.0081
4	101	168	67	0.98529	0.3828	0.371279	0.011521	3.0098
5	168	249	81	1.20896	0.3535	0.359431	-0.005931	-1.6777
6	249	307	58	0.71605	0.3355	0.340216	-0.004716	-1.4058

---------- SYS=ASW-32 ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	5	300.66771097	60.13354219
RESIDUAL	1	0.21036271	0.21036271
UNCORRECTED TOTAL	6	300.87807368	
(CORRECTED TOTAL)	5	54.90298664	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	19.12971366	19.464691772	-228.18866000	266.44808731
B	0.80253498	0.251593491	-2.39421192	3.99928187
C	-4.61111330	0.780629398	-14.52979043	5.30756383
D	1.84333492	0.370280592	-2.86145029	6.54812013
E	-0.55878998	0.117372207	-2.05012125	0.93254129

LOT	XL	XU	YI	R	AUC	UCP	DIF	PCT
1	0	12	12	1.00000	0.2338	0.240501	-0.0067008	-2.8660
2	12	38	26	2.16667	0.1643	0.169911	-0.0056109	-3.4150
3	38	86	48	1.84615	0.1524	0.146793	0.0056075	3.6794
4	86	134	48	1.00000	0.0974	0.101842	-0.0044415	-4.5601
5	134	184	50	1.04167	0.1441	0.139663	0.0044373	3.0793
6	184	264	80	1.60000	0.1518	0.153356	-0.0015559	-1.0250

---------- SYS=CP-1035N ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	5	208.81019346	41.76203869
RESIDUAL	1	0.43795874	0.43795874
UNCORRECTED TOTAL	6	209.24815220	
(CORRECTED TOTAL)	5	41.36682739	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	0.0875925714	0.1921372934	-2.353703878	2.528889021
B	-.1243106659	0.3810827580	-4.966348189	4.717726858
C	-.7330733443	1.4747928369	-19.471791130	18.005644441
D	0.0186594333	0.8082231309	-10.250623668	10.287942535
E	-.0295428257	0.2664753948	-3.415379192	3.356293541

LOT	XL	XU	YI	R	AUC	UCP	DIF	PCT
1	0	12	12	1.00000	0.1248	0.138765	-0.013965	-11.190
2	12	38	26	2.16667	0.0903	0.102414	-0.012114	-13.415
3	38	86	48	1.84615	0.1236	0.114458	0.009142	7.396
4	86	134	48	1.00000	0.1287	0.131723	-0.003023	-2.348
5	134	184	50	1.04167	0.1310	0.126219	0.004781	3.650
6	184	264	80	1.60000	0.1154	0.117898	-0.002498	-2.164

---------- SYS=JTIDS ----------

NOTE: THE RESIDUAL SS HAS FAILED TO CONVERGE IN THE SPECIFIED NUMBER OF ITERATIONS.

LOT	XL	XU	YI	R	AUC	UCP	DIF	PCT
1	0	45	45	1.00000	0.4068	.	.	.
2	45	121	76	1.68889	0.2764	.	.	.
3	121	198	77	1.01316	0.2466	.	.	.
4	198	270	72	0.93506	0.2308	.	.	.
5	270	327	57	0.79167	0.2205	.	.	.

---------- SYS=LANNAV ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	5	87339.225704	17467.845141
RESIDUAL	2	0.005192	0.002596
UNCORRECTED TOTAL	7	87339.230896	
(CORRECTED TOTAL)	6	17386.822804	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	1.820047696	0.01599478698	1.7512269261	1.8888684659
B	-0.113529232	0.00052966833	-0.1158082361	-0.1112502283
C	-1.001306001	0.00180932141	-1.0090909684	-0.9935210340
D	-0.000212656	0.00013614692	-0.0007984550	0.0003731437
E	0.000066777	0.00002353573	-0.0000344897	0.0001680447

LOT	XL	XU	YI	R	AUC	UCP	DIF	PCT
1	0	4	4	1.00000	1.7500	1.75062	-0.00062346	-0.035626
2	4	38	34	8.50000	1.3199	1.31992	-0.00001796	-0.001361
3	38	176	138	4.05882	1.0761	1.07609	0.00000570	0.000529
4	176	320	144	1.04348	0.9679	0.96804	-0.00014280	-0.014753
5	320	464	144	1.00000	0.9184	0.91801	0.00039006	0.042472
6	464	608	144	1.00000	0.8854	0.88568	-0.00027661	-0.031241
7	608	724	116	0.80556	0.8643	0.86426	0.00003864	0.004471

---------- SYS=LANTARP ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	5	64803.849970	12960.769994
RESIDUAL	2	0.030804	0.015402
UNCORRECTED TOTAL	7	64803.880775	
(CORRECTED TOTAL)	6	12795.420992	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	1.486138797	0.03739691403	1.3252310953	1.6470464992
B	-0.105203237	0.00153455514	-0.1118059675	-0.0986005067
C	-0.996944641	0.00504398714	-1.0186474042	-0.9752418773
D	-0.000255165	0.00034888583	-0.0017563165	0.0012459857
E	0.000098995	0.00005881348	-0.0001540618	0.0003520517

LOT	XL	XU	YI	R	AUC	UCP	DIF	PCT
1	0	4	4	1.00000	1.4375	1.44126	-0.0037580	-0.26142
2	4	38	34	8.50000	1.1286	1.12869	-0.0000891	-0.00789
3	38	166	128	3.76471	0.9375	0.93746	0.0000407	0.00434
4	166	310	144	1.12500	0.8490	0.84933	-0.0003268	-0.03850
5	310	454	144	1.00000	0.8081	0.80719	0.0009061	0.11213
6	454	598	144	1.00000	0.7795	0.78022	-0.0007234	-0.09281
7	598	714	116	0.80556	0.7619	0.76172	0.0001826	0.02397

---------- SYS=LANTREC----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	5	11938.396467	2387.679293
RESIDUAL	0	0.000000	0.000000
UNCORRECTED TOTAL	5	11938.396467	
(CORRECTED TOTAL)	4	1483.530658	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	1.298507734	0	1.2985077343	1.2985077343
B	-0.088012254	0	-0.0880122536	-0.0880122536
C	-1.281533089	0	-1.2815330886	-1.2815330886
D	0.138259272	0	0.1382592715	0.1382592715
E	-0.038358090	0	-0.0383580897	-0.0383580897

LOT	XL	XU	YI	R	AUC	UCP	DIF	PCT
1	0	79	79	1.00000	0.4383	0.4383	2.08167E-17	4.74941E-15
2	79	271	192	2.43038	0.3353	0.3353	2.08167E-17	6.20838E-15
3	271	463	192	1.00000	0.2975	0.2975	-2.08167E-17	-6.99720E-15
4	463	655	192	1.00000	0.2865	0.2865	1.24900E-16	4.35951E-14
5	655	720	65	0.33854	0.2693	0.2693	-2.42861E-16	-9.01824E-14

C.6.4 - Helicopter Programs

---------- SYS=HH-52 ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	5	3110.9423345	622.1884669
RESIDUAL	1	0.0196905	0.0196905
UNCORRECTED TOTAL	6	3110.9620250	
(CORRECTED TOTAL)	5	731.1991835	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	22.43731843	6.0133639610	-53.968484058	98.843120920
B	-0.36448958	0.0193149419	-0.609905230	-0.119073926
C	-1.79326858	0.0755090930	-2.752687114	-0.833850042
D	0.38317637	0.0589105435	-0.365340995	1.131693737
E	-0.15829848	0.0366975875	-0.624578031	0.307981062

LOT	XL	XU	YI	R	AUC	UCP	DIF	PCT
1	0	28	28	1.00000	1.577	1.57696	0.0000380	0.00241
2	28	43	15	0.53571	1.104	1.10305	0.0009491	0.08597
3	43	60	17	1.13333	1.085	1.08670	-0.0017007	-0.15674
4	60	75	15	0.88235	1.012	1.01015	0.0018476	0.18257
5	75	87	12	0.80000	1.041	1.04941	-0.0084115	-0.80802
6	87	99	12	1.00000	1.055	1.04769	0.0073097	0.69286

---------- SYS=CH-46 ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	5	358546.34036	71709.26807
RESIDUAL	3	1066.67880	355.55960
UNCORRECTED TOTAL	8	359613.01916	
(CORRECTED TOTAL)	7	57764.44745	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	14.84253798	4.7445452600	-0.2569773129	29.942053267
B	-0.10911015	0.0834332078	-0.3746363315	0.156416036
C	-1.25276923	0.1814569649	-1.8302560167	-0.675282435
D	-0.03378883	0.0675873844	-0.2488856842	0.181308018
E	0.01217687	0.0202471831	-0.0522597888	0.076613532

LOT	XL	XU	YI	R	AUC	UCP	DIF	PCT
1	0	14	14	1.00000	7.541	6.05556	1.48544	19.6982
2	14	50	36	2.57143	3.898	4.04658	-0.14858	-3.8116
3	50	110	60	1.66667	2.766	2.99020	-0.22420	-8.1055
4	110	195	85	1.41667	2.419	2.51818	-0.09918	-4.1000
5	195	394	199	2.34118	1.986	1.96628	0.01972	0.9931
6	394	486	92	0.46231	2.236	2.29735	-0.06135	-2.7435
7	486	576	90	0.97826	2.370	2.17992	0.19008	8.0203
8	576	624	48	0.53333	2.547	2.62396	-0.07696	-3.0217

---------- SYS=H-53 ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	5	619004.53712	123800.90742
RESIDUAL	3	74.22814	24.74271
UNCORRECTED TOTAL	8	619078.76526	
(CORRECTED TOTAL)	7	355155.11828	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	7.759975405	0.82393298378	5.1378086840	10.382142126
B	-0.156464566	0.02280188809	-0.2290315753	-0.083897558
C	-0.987962101	0.01941428568	-1.0497480649	-0.926176137
D	0.010328796	0.01088092474	-0.0242997465	0.044957339
E	-0.000804402	0.00078785644	-0.0033117550	0.001702951

LOT	XL	XU	YI	R	AUC	UCP	DIF	PCT
1	0	10	10	1.0000	6.752	6.74302	0.00898	0.1329
2	10	141	131	13.1000	4.264	4.26411	-0.00011	-0.0027
3	141	281	140	1.0687	3.762	3.76047	0.00153	0.0408
4	281	293	12	0.0857	3.382	3.30548	0.07652	2.2625
5	293	323	30	2.5000	3.341	3.54013	-0.19913	-5.9601
6	323	331	8	0.2667	3.154	3.23394	-0.07994	-2.5345
7	331	361	30	3.7500	3.685	3.55546	0.12954	3.5155
8	361	367	6	0.2000	3.947	3.16293	0.78407	19.8650

---------- SYS=CH-47 ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	5	482317.81150	96463.56230
RESIDUAL	7	3542.72349	506.10336
UNCORRECTED TOTAL	12	485860.53499	
(CORRECTED TOTAL)	11	132801.70813	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	15.29996256	4.2031877041	5.3609231930	25.239001931
B	-0.04675339	0.0529901281	-0.1720561418	0.078549354
C	-1.40145733	0.1211065334	-1.6878310777	-1.115083588
D	0.11154793	0.0645673356	-0.0411307828	0.264226644
E	-0.03226695	0.0202429469	-0.0801342931	0.015600402

LOT	XL	XU	YI	R	AUC	UCP	DIF	PCT
1	0	18	18	1.00000	6.181	5.52558	0.6554	10.604
2	18	42	24	1.33333	5.226	4.87795	0.3481	6.660
3	42	66	24	1.00000	4.559	4.56248	-0.0035	-0.076
4	66	126	60	2.50000	3.459	3.27939	0.1796	5.193
5	126	198	72	1.20000	2.760	3.14952	-0.3895	-14.113
6	198	358	160	2.22222	2.307	2.40447	-0.0975	-4.225
7	358	442	84	0.52500	2.313	2.43296	-0.1200	-5.186
8	442	585	143	1.70238	2.695	2.51476	0.1802	6.688
9	585	630	45	0.31469	3.463	2.77722	0.6858	19.803
10	630	666	36	0.80000	3.085	3.42923	-0.3442	-11.158
11	666	678	12	0.33333	3.671	4.52391	-0.8529	-23.234
12	678	690	12	1.00000	3.852	5.06355	-1.2116	-31.453

---------- SYS=H-54 ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	5	21128.788908	4225.757782
RESIDUAL	0	0.000000	0.000000
UNCORRECTED TOTAL	5	21128.788908	
(CORRECTED TOTAL)	4	3891.650213	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	4.420312300	0	4.4203122997	4.4203122997
B	-0.236844759	0	-0.2368447593	-0.2368447593
C	-0.521576392	0	-0.5215763923	-0.5215763923
D	-0.365945519	0	-0.3659455189	-0.3659455189
E	0.069305738	0	0.0693057383	0.0693057383

LOT	XL	XU	YI	R	AUC	UCP	DIF	PCT
1	0	6	6	1.00000	5.248	5.248	-1.11022E-16	-2.11552E-15
2	6	30	24	4.00000	3.388	3.388	0	0
3	30	60	30	1.25000	2.801	2.801	4.99600E-16	1.78365E-14
4	60	83	23	0.76667	3.402	3.402	-2.77556E-16	-8.15861E-15
5	83	89	6	0.26087	3.083	3.083	-1.11022E-15	-3.60111E-14

---------- SYS=HH-60D ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	4	123892.22000	30973.05500
RESIDUAL	0	0.00000	0.00000
UNCORRECTED TOTAL	4	123892.22000	
(CORRECTED TOTAL)	3	24351.97000	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	6.436049085	0	6.4360490849	6.4360490849
B	-0.249974446	0	-0.2499744460	-0.2499744460
C	-0.581005061	0	-0.5810050607	-0.5810050607
D	-0.116925505	0	-0.1169255055	-0.1169255055
E	0.011296887	0	0.0112968875	0.0112968875

LOT	XL	XU	YI	R	AUC	UCP	DIF	PCT
1	0	3	3	1.00000	9.2	9.2	0	0
2	3	28	25	8.33333	7.1	7.1	1.11022E-16	1.56369E-15

3	28	63	35	1.40000	6.7	6.7	-3.33067E-16	-4.97115E-15
4	63	92	29	0.82857	6.6	6.6	5.55112E-16	8.41078E-15

---------- SYS=SH-3 ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	5	72787.516732	14557.503346
RESIDUAL	4	188.796810	47.199202
UNCORRECTED TOTAL	9	72976.313542	
(CORRECTED TOTAL)	8	13013.690662	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	4.241110221	1.4873914006	0.1115055240	8.3707149186
B	-0.168868932	0.0318611323	-0.2573284203	-0.0804094444
C	-1.053078893	0.1429321133	-1.4499166900	-0.6562410961
D	0.109714456	0.0758984868	-0.1010106750	0.3204395867
E	-0.031686932	0.0221309357	-0.0931314290	0.0297575644

LOT	XL	XU	YI	R	AUC	UCP	DIF	PCT
1	0	20	20	1.00000	3.327	3.31562	0.01138	0.342
2	20	69	49	2.45000	2.480	2.49516	-0.01516	-0.611
3	69	140	71	1.44898	2.319	2.29672	0.02228	0.961
4	140	185	45	0.63380	1.811	1.82212	-0.01112	-0.614
5	185	221	36	0.80000	1.870	1.82120	0.04880	2.609
6	221	257	36	1.00000	1.589	1.83972	-0.25072	-15.778
7	257	287	30	0.83333	1.703	1.73998	-0.03698	-2.171
8	287	335	48	1.60000	1.930	1.88854	0.04146	2.148
9	335	350	15	0.31250	2.144	1.49183	0.65217	30.418

C.6.5 - Tactical Armament Programs

---------- SYS=LLLGB ----------

ERROR: ON OBSERVATION 4, USE OF THE ABOVE PARAMETERS HAS RESULTED IN A DERIVATIVE OR RESIDUAL IN EXCESS OF 1E30. ITERATIONS TERMINATED.

LOT	XL	XU	YI	R	AUC	UCP	DIF	PCT
1	0	1600	1600	1.00000	0.0275	.	.	.
2	1600	4550	2950	1.84375	0.0206	.	.	.
3	4550	8290	3740	1.26780	0.0189	.	.	.
4	8290	17270	8980	2.40107	0.0162	.	.	.
5	17270	26890	9620	1.07127	0.0147	.	.	.
6	26890	41290	14400	1.49688	0.0137	.	.	.
7	41290	56890	15600	1.08333	0.0129	.	.	.

8	56890	72490	15600	1.00000	0.0123	.	.	.
9	72490	88090	15600	1.00000	0.0118	.	.	.
10	88090	100000	11910	0.76346	0.0115	.	.	.

---------- SYS=CEM ----------

ERROR: ON OBSERVATION 3, USE OF THE ABOVE PARAMETERS HAS RESULTED IN A DERIVATIVE OR RESIDUAL IN EXCESS OF 1E30. ITERATIONS TERMINATED.

LOT	XL	XU	YI	R	AUC	UCP	DIF	PCT
1	0	172	172	1.00000	0.06924	.	.	.
2	172	1432	1260	7.32558	0.03038	.	.	.
3	1432	7557	6125	4.86111	0.01988	.	.	.
4	7557	21777	14220	2.32163	0.01765	.	.	.
5	21777	50227	28450	2.00070	0.01619	.	.	.
6	50227	85247	35020	1.23093	0.01401	.	.	.
7	85247	134157	48910	1.39663	0.01258	.	.	.
8	134157	171666	37509	0.76690	0.01181	.	.	.

---------- SYS=GBU-15 ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	5	40030.311602	8006.062320
RESIDUAL	4	49.974635	12.493659
UNCORRECTED TOTAL	9	40080.286237	
(CORRECTED TOTAL)	8	10225.399632	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	0.0678323318	0.03726888402	-0.0356412788	0.17130594234
B	-.2109658305	0.10548744960	-0.5038419808	0.08191031974
C	-.6307718564	0.20302948990	-1.1944644626	-.06707925008
D	0.0137175573	0.02084862138	-0.0441667122	0.07160182689
E	-.0040812309	0.00281998878	-0.0119106690	0.00374820724

LOT	XL	XU	YI	R	AUC	UCP	DIF	PCT
1	0	40	40	1.00000	0.1975	0.159707	0.037793	19.136
2	40	105	65	1.62500	0.2000	0.135899	0.064101	32.051
3	105	445	340	5.23077	0.1439	0.144104	-0.000204	-0.142
4	445	695	250	0.73529	0.1483	0.142964	0.005336	3.598
5	695	1015	320	1.28000	0.1308	0.146472	-0.015672	-11.982
6	1015	1615	600	1.87500	0.1718	0.170528	0.001272	0.740
7	1615	2215	600	1.00000	0.1539	0.155601	-0.001701	-1.105
8	2215	2815	600	1.00000	0.1483	0.146841	0.001459	0.984
9	2815	3415	600	1.00000	.1420	0.140330	0.001670	1.176

C.6.6 - Tactical Missile Programs

---------- SYS=AMRAAM ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	5	3265482.7960	653096.5592
RESIDUAL	5	1362.0730	272.4146
UNCORRECTED TOTAL	10	3266844.8690	
(CORRECTED TOTAL)	9	183807.0285	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	4.861103989	1.4239470778	1.2007845490	8.5214234292
B	-0.353344334	0.0293595433	-0.4288143487	-0.2778743188
C	-0.982790974	0.0732795904	-1.1711594277	-0.7944225202
D	-0.008078680	0.0100972726	-0.0340341697	0.0178768089
E	0.001005259	0.0014695677	-0.0027723305	0.0047828478

LOT	XL	XU	YI	R	AUC	UCP	DIF	PCT
1	0	194	194	1.00000	1.233	1.23273	0.0002703	0.0219
2	194	1251	1057	5.44845	0.512	0.51211	-0.0001064	-0.0208
3	1251	3215	1964	1.85809	0.342	0.33830	0.0037019	1.0824
4	3215	6211	2996	1.52546	0.257	0.26154	-0.0045423	-1.7674
5	6211	9111	2900	0.96796	0.232	0.22453	0.0074718	3.2206
6	9111	12011	2900	1.00000	0.194	0.19986	-0.0058628	-3.0220
7	12011	14911	2900	1.00000	0.182	0.18334	-0.0013351	-0.7336
8	14911	17911	3000	1.03448	0.170	0.17067	-0.0006672	-0.3925
9	17911	20911	3000	1.00000	0.158	0.16107	-0.0030747	-1.9460
10	20911	24674	3763	1.25433	0.155	0.15070	0.0042960	2.7716

---------- SYS=HARM ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	5	1585799.5841	317159.9168
RESIDUAL	6	241.1342	40.1890
UNCORRECTED TOTAL	11	1586040.7184	
(CORRECTED TOTAL)	10	338342.8883	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	2.302362145	0.23253976870	1.7333574181	2.8713668712
B	-0.170399327	0.01727732160	-0.2126754401	-0.1281232131
C	-1.118875406	0.03305171946	-1.1997501080	-1.0380007031
D	0.003511073	0.00885977190	-0.0181680236	0.0251901694
E	-0.001774829	0.00237377979	-0.0075832636	0.0040336046

LOT	XL	XU	YI	R	AUC	UCP	DIF	PCT
1	0	80	80	1.00000	0.809	0.787214	0.021786	2.6929
2	80	316	236	2.95000	0.517	0.481427	0.035573	6.8806
3	316	712	396	1.67797	0.400	0.394460	0.005540	1.3850
4	712	1399	687	1.73485	0.314	0.326171	-0.012171	-3.8761
5	1399	3144	1745	2.54003	0.249	0.250566	-0.001566	-0.6288
6	3144	5612	2468	1.41433	0.223	0.221012	0.001988	0.8914
7	5612	7731	2119	0.85859	0.208	0.209496	-0.001496	-0.7192
8	7731	9863	2132	1.00613	0.197	0.199684	-0.002684	-1.3622
9	9863	12863	3000	1.40713	0.184	0.183227	0.000773	0.4203
10	12863	15863	3000	1.00000	0.177	0.176455	0.000545	0.3082
11	15863	16961	1098	0.36600	0.196	0.193046	0.002954	1.5072

---------- SYS=IIR ----------

NOTE: THE RESIDUAL SS HAS FAILED TO CONVERGE IN THE SPECIFIED NUMBER OF ITERATIONS.

LOT	XL	XU	YI	R	AUC	UCP	DIF	PCT
1	0	200	200	1.00000	0.309	.	.	.
2	200	1100	900	4.50000	0.135	.	.	.
3	1100	3700	2600	2.88889	0.083	.	.	.
4	3700	9429	5729	2.20346	0.082	.	.	.
5	9429	18429	9000	1.57095	0.062	.	.	.
6	18429	30429	12000	1.33333	0.057	.	.	.
7	30429	42429	12000	1.00000	0.055	.	.	.
8	42429	54429	12000	1.00000	0.053	.	.	.
9	54429	60664	6235	0.51958	0.057	.	.	.

---------- SYS=AIM7F-R ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	5	115060.49536	23012.09907
RESIDUAL	3	91.08954	30.36318
UNCORRECTED TOTAL	8	115151.58490	
(CORRECTED TOTAL)	7	6543.29279	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	4.332650684	1.4175614097	-0.1787385022	8.8440398705
B	-0.327106257	0.0509162339	-0.4891471709	-0.1650653422
C	-1.141041591	0.1171114860	-1.5137488952	-0.7683342867
D	0.014054213	0.0311735390	-0.0851555747	0.1132640013
E	-0.006925074	0.0083058004	-0.0333582841	0.0195081357

LOT	XL	XU	YI	R	AUC	UCP	DIF	PCT
1	0	100	100	1.00000	0.741	0.770494	-0.029494	-3.9803
2	100	325	225	2.25000	0.378	0.351117	0.026883	7.1118
3	325	925	600	2.66667	0.199	0.202110	-0.003110	-1.5627
4	925	1725	800	1.33333	0.169	0.168897	0.000103	0.0612
5	1725	2825	1100	1.37500	0.134	0.135061	-0.001061	-0.7918
6	2825	4225	1400	1.27273	0.116	0.113491	0.002509	2.1630
7	4225	5125	900	0.64286	0.111	0.109195	0.001805	1.6262
8	5125	6269	1144	1.27111	0.095	0.099455	-0.004455	-4.6896

---------- SYS=AIM7F-GD ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	5	28537.684604	5707.536921
RESIDUAL	1	83.473421	83.473421
UNCORRECTED TOTAL	6	28621.158025	
(CORRECTED TOTAL)	5	7732.207921	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	2.236562833	1.8206485548	-20.896597704	25.369723369
B	-0.410861480	0.3376420698	-4.700941618	3.879218658
C	-1.000627167	0.5355992835	-7.805951664	5.804697329
D	-0.011772598	0.1089908226	-1.396609990	1.373064793
E	0.002011038	0.0204550528	-0.257890863	0.261912939

LOT	XL	XU	YI	R	AUC	UCP	DIF	PCT
1	0	15	15	1.00000	1.551	1.21319	0.337811	21.780
2	15	85	70	4.66667	0.379	0.45237	-0.073366	-19.358
3	85	295	210	3.00000	0.228	0.24345	-0.015454	-6.778
4	295	505	210	1.00000	0.195	0.18169	0.013308	6.825
5	505	1255	750	3.57143	0.130	0.12562	0.004383	3.372
6	1255	2565	1310	1.74667	0.090	0.09115	-0.001151	-1.279

C.7 - Modified Alternative Two Non-linear Regression

This section contains the summary results produced by the non-linear regression procedure in SAS. The SAS program used to produce this run was discussed in Appendix B.7.

C.7.1 - Bomber Aircraft Programs

---------- SYS=B-1B ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	5	59477976.810	11895595.362
RESIDUAL	0	0.000	0.000
UNCORRECTED TOTAL	5	59477976.810	
(CORRECTED TOTAL)	4	17234615.032	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	391.4722477	0	391.47224774	391.47224774
B	-0.2627880	0	-0.26278796	-0.26278796
C	-0.0067588	0	-0.00675882	-0.00675882
D	-0.0001379	0	-0.00013791	-0.00013791
E	0.0003286	0	0.00032864	0.00032864
F	-0.0000183	0	-0.00001827	-0.00001827

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	1	1.00000	535.8	535.8	0	0
2	1	8	6.00000	260.3	260.3	7.10543E-15	2.72971E-15
3	8	18	0.42857	200.5	200.5	3.55271E-15	1.77193E-15
4	18	52	2.40000	142.0	142.0	-7.10543E-15	-5.00382E-15
5	52	100	0.41176	111.3	111.3	-1.77636E-14	-1.59601E-14

---------- SYS=B-52 ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	6	70513165.164	11752194.194
RESIDUAL	4	1887606.746	471901.687
UNCORRECTED TOTAL	10	72400771.910	
(CORRECTED TOTAL)	9	18070289.989	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	107.2953890	64.476400577	-71.717375570	286.30815366
B	-0.1422280	0.165700874	-0.602281150	0.31782516
C	-0.0214379	0.051481838	-0.164372441	0.12149669
D	0.0040693	0.030871934	-0.081643812	0.08978233
E	-0.0016023	0.001591992	-0.006022368	0.00281767
F	0.0000062	0.000005795	-0.000009913	0.00002227

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	20	1.00000	112.5	75.0815	37.418	33.261
2	20	63	1.15000	37.0	48.0827	-11.083	-29.953
3	63	88	-0.41860	28.6	51.7717	-23.172	-81.020
4	88	165	2.08000	32.3	31.2411	1.059	3.278
5	165	298	0.72727	23.4	26.2379	-2.838	-12.128
6	298	500	0.51880	28.4	28.1514	0.249	0.875
7	500	601	-0.50000	27.3	25.2483	2.052	7.515
8	601	640	-0.61386	27.3	33.5844	-6.284	-23.020
9	640	702	0.58974	35.4	24.1623	11.238	31.745
10	702	742	-0.35484	35.0	31.0651	3.935	11.243

---------- SYS=B-58 ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	4	14238328.874	3559582.219
RESIDUAL	0	0.000	0.000
UNCORRECTED TOTAL	4	14238328.874	
(CORRECTED TOTAL)	3	1830393.074	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	22.83529489	0	22.835294889	22.835294889
B	0.42851176	0	0.428511757	0.428511757
C	0.01887566	0	0.018875660	0.018875660
D	0.40288351	0	0.402883508	0.402883508
E	-0.00387371	0	-0.003873709	-0.003873709
F	-0.00035249	0	-0.000352488	-0.000352488

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	17	1.00000	93.86	93.86	1.77636E-15	1.89256E-15
2	17	53	1.11765	80.26	80.26	-3.55271E-15	-4.42651E-15
3	53	73	-0.44444	73.16	73.16	1.77636E-15	2.42804E-15
4	73	103	0.50000	36.56	36.56	-5.32907E-15	-1.45762E-14

C.7.2 - Fighter Aircraft Programs

----------SYS=A-10----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	6	5178532.0308	863088.6718
RESIDUAL	3	8685.3536	2895.1179
UNCORRECTED TOTAL	9	5187217.3844	

(CORRECTED TOTAL)	8	1226666.3049

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	8.992847757	3.9901148671	-3.7056928073	21.691388322
B	0.064936971	0.1214881237	-0.3216989824	0.451572925
C	-0.004343674	0.0311506591	-0.1034806462	0.094793299
D	0.000447665	0.0073700082	-0.0230073861	0.023902716
E	-0.000992853	0.0014071986	-0.0054712627	0.003485556
F	0.000002582	0.0000071008	-0.0000200159	0.000025181

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	22	1.00000	12.37	9.7943	2.5757	20.822
2	22	75	1.40909	9.16	9.5001	-0.3401	-3.713
3	75	95	-0.62264	8.20	11.1783	-2.9783	-36.320
4	95	195	4.00000	8.20	8.1955	0.0045	0.055
5	195	339	0.44000	7.82	7.7661	0.0539	0.689
6	339	483	0.00000	7.59	7.7617	-0.1717	-2.262
7	483	627	0.00000	7.82	7.7044	0.1156	1.479
8	627	687	-0.58333	10.18	10.0641	0.1159	1.138
9	687	707	-0.66667	13.64	12.4110	1.2290	9.011

---------- SYS=F-100 ----------

ERROR: ON OBSERVATION 2, USE OF THE ABOVE PARAMETERS HAS RESULTED IN A DERIVATIVE OR RESIDUAL IN EXCESS OF 1E30. ITERATIONS TERMINATED.

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	23	1.0000	6.51	.	.	.
2	23	568	22.6957	3.45	.	.	.
3	568	1161	0.0881	3.08	.	.	.
4	1161	1720	-0.0573	3.10	.	.	.
5	1720	2277	-0.0036	2.50	.	.	.

---------- SYS=F-101 ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	6	7076859.8446	1179476.6408
RESIDUAL	0	0.0000	0.0000
UNCORRECTED TOTAL	6	7076859.8446	
(CORRECTED TOTAL)	5	2200718.4643	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	26.64064384	0	26.640643837	26.640643837
B	-0.12621768	0	-0.126217679	-0.126217679

C	0.00334168	0	0.003341678	0.003341678
D	-0.02231696	0	-0.022316955	-0.022316955
E	-0.00188568	0	-0.001885675	-0.001885675
F	0.00000645	0	0.000006447	0.000006447

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	31	1.00000	16.85	16.85	-8.88178E-16	-5.27109E-15
2	31	115	1.70968	7.58	7.58	1.11022E-15	1.46467E-14
3	115	424	2.67857	6.91	6.91	4.44089E-16	6.42676E-15
4	424	630	-0.33333	5.76	5.76	1.11022E-15	1.92747E-14
5	630	714	-0.59223	5.27	5.27	-4.44089E-16	-8.42674E-15
6	714	807	0.10714	5.22	5.22	-2.22045E-15	-4.25373E-14

---------- SYS=F-102 ----------

ERROR: ON OBSERVATION 3, USE OF THE ABOVE PARAMETERS HAS RESULTED IN A DERIVATIVE OR RESIDUAL IN EXCESS OF 1E30. ITERATIONS TERMINATED.

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	37	1.00000	11.66	.	.	.
2	37	145	1.91892	5.17	.	.	.
3	145	707	4.20370	3.50	.	.	.
4	707	847	-0.75089	2.21	.	.	.

---------- SYS=F-106 ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	4	4765078.8733	1191269.7183
RESIDUAL	0	0.0000	0.0000
UNCORRECTED TOTAL	4	4765078.8733	
(CORRECTED TOTAL)	3	480903.3427	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	41.92637550	0	41.926375495	41.926375495
B	0.08339599	0	0.083395993	0.083395993
C	0.09504415	0	0.095044148	0.095044148
D	0.02604880	0	0.026048798	0.026048798
E	-0.00722594	0	-0.007225944	-0.007225944
F	0.00001326	0	0.000013260	0.000013260

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	42	1.00000	34.19	34.19	8.88178E-16	2.59777E-15
2	42	130	1.09524	10.54	10.54	4.44089E-16	4.21337E-15
3	130	175	-0.48864	11.64	11.64	-1.55431E-15	-1.33532E-14
4	175	340	2.66667	7.59	7.59	0	0

---------- SYS=F-15AB ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	6	10247642.059	1707940.343
RESIDUAL	0	0.000	0.000
UNCORRECTED TOTAL	6	10247642.059	
(CORRECTED TOTAL)	5	1585918.021	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	34.73564275	0	34.735642753	34.735642753
B	-0.11117925	0	-0.111179246	-0.111179246
C	0.00573761	0	0.005737609	0.005737609
D	-0.00126181	0	-0.001261809	-0.001261809
E	-0.00104248	0	-0.001042484	-0.001042484
F	0.00000768	0	0.000007681	0.000007681

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	30	1.00000	25.597	25.597	1.33227E-15	5.20478E-15
2	30	92	1.06667	19.556	19.556	-8.88178E-16	-4.54172E-15
3	92	164	0.16129	17.183	17.183	4.44089E-16	2.58447E-15
4	164	272	0.50000	17.126	17.126	3.10862E-15	1.81515E-14
5	272	296	-0.77778	16.021	16.021	1.73195E-14	1.08105E-13
6	296	404	3.50000	16.272	16.272	-1.77636E-15	-1.09166E-14

---------- SYS=F-15CD ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	6	8418404.2869	1403067.3811
RESIDUAL	2	444.8593	222.4297
UNCORRECTED TOTAL	8	8418849.1462	
(CORRECTED TOTAL)	7	752208.0946	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	0.9801180073	0.51809237116	-1.2490780381	3.2093140527
B	0.7189668282	0.10570628335	0.2641444029	1.1737892536
C	-.0170067852	0.01515794181	-0.0822268615	0.0482132910
D	0.1002200911	0.02718929732	-0.0167672985	0.2172074807
E	-.0083388636	0.00097887764	-0.0125506804	-0.0041270468
F	0.0000803205	0.00001104174	0.0000328113	0.0001278298

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	97	1.00000	17.249	17.2449	0.00408	0.0236
2	97	175	-0.19588	15.588	15.6287	-0.04066	-0.2609
3	175	235	-0.23077	15.508	15.3527	0.15534	1.0017
4	235	277	-0.30000	17.665	17.9630	-0.29802	-1.6871
5	277	313	-0.14286	19.943	19.6627	0.28034	1.4057
6	313	352	0.08333	19.308	19.5181	-0.21006	-1.0880
7	352	388	-0.07692	21.954	21.8241	0.12989	0.5917
8	388	436	0.33333	21.017	21.0277	-0.01071	-0.0510

---------- SYS=F-15E----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	5	14025321.012	2805064.202
RESIDUAL	1	7455.525	7455.525
UNCORRECTED TOTAL	6	14032776.537	
(CORRECTED TOTAL)	5	172346.387	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	5.409385832	4.6193468078	-53.284034708	64.102806372
B	0.323377166	0.0000000000	0.323377166	0.323377166
C	0.100097860	0.0712591021	-0.805320292	1.005516011
D	0.027360355	0.0586383625	-0.717698679	0.772419389
E	0.000469879	0.0053297742	-0.067250232	0.068189990
F	-0.000019228	0.0000401219	-0.000529018	0.000490561

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	60	1.00000	20.544	20.5440	-0.00000	-0.0000
2	60	132	0.20000	19.203	19.2030	-0.00000	-0.0000
3	132	228	0.33333	17.608	17.6080	0.00000	0.0000
4	228	324	0.00000	16.175	15.8377	0.33726	2.0850
5	324	420	0.00000	16.041	16.7743	-0.73326	-4.5712
6	420	516	0.00000	17.927	17.5301	0.39695	2.2142

---------- SYS=F-16AB ----------

NOTE: THE RESIDUAL SS HAS FAILED TO CONVERGE IN THE SPECIFIED NUMBER OF ITERATIONS.

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	105	1.00000	10.14	.	.	.
2	105	250	0.38095	7.74	.	.	.
3	250	425	0.20690	8.04	.	.	.
4	425	605	0.02857	5.05	.	.	.
5	605	725	-0.33333	5.13	.	.	.

---------- SYS=F-16E ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	6	48016685.827	8002780.971
RESIDUAL	4	159.796	39.949
UNCORRECTED TOTAL	10	48016845.623	
(CORRECTED TOTAL)	9	1747028.765	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	18.61030848	0.46944060102	17.306950060	19.913666907
B	-4.33353785	0.05977156146	-4.499488061	-4.167587633
C	-0.16506958	0.00382917502	-0.175700935	-0.154438234
D	0.40093864	0.00794338859	0.378884556	0.422992724
E	0.04896582	0.00066344703	0.047123818	0.050807816
F	-0.00013544	0.00000181963	-0.000140495	-0.000130391

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	120	1.00000	9.86	9.8600	0.000000	0.00000
2	120	264	0.20000	10.58	10.5800	0.000000	0.00000
3	264	414	0.04167	14.55	14.5500	-0.000000	-0.00000
4	414	630	0.44000	11.93	11.9300	-0.000000	-0.00000
5	630	846	0.00000	11.28	11.2594	0.020612	0.18273
6	846	1062	0.00000	11.02	11.0401	-0.020138	-0.18274
7	1062	1278	0.00000	10.88	10.8693	0.010734	0.09866
8	1278	1494	0.00000	10.69	10.7296	-0.039603	-0.37047
9	1494	1710	0.00000	10.61	10.6117	-0.001715	-0.01616
10	1710	1926	0.00000	10.54	10.5099	0.030134	0.28590

C.7.3 - Electronics Programs

---------- SYS=ARC-109V ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	5	66.744073730	13.348814746
RESIDUAL	0	0.000000000	0.000000000
UNCORRECTED TOTAL	5	66.744073730	
(CORRECTED TOTAL)	4	29.010182832	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	0.0508125509	0	0.05081255088	0.05081255088
B	-.1148650331	0	-.11486503313	-.11486503313

C	-.0278567293	0	-.02785672932	-.02785672932
D	0.0062632117	0	0.00626321166	0.00626321166
E	-.0000107375	0	-.00001073750	-.00001073750
F	0.0000011106	0	0.00000111057	0.00000111

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	4	1.00000	0.0487	0.0487	-1.73472E-18	-3.56206E-15
2	4	28	5.00000	0.0393	0.0393	-2.60209E-18	-6.62108E-15
3	28	107	2.29167	0.0285	0.0285	-4.33681E-19	-1.52169E-15
4	107	333	1.86076	0.0313	0.0313	1.73472E-18	5.54225E-15
5	333	441	-0.52212	0.0303	0.0303	-1.38778E-17	-4.58013E-14

---------- SYS=ARC-54 ----------

ERROR: ON OBSERVATION 1, USE OF THE ABOVE PARAMETERS HAS RESULTED IN A DERIVATIVE OR RESIDUAL IN EXCESS OF 1E30. ITERATIONS TERMINATED.

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	900	1.00000	0.0210	.	.	.
2	900	1753	-0.05222	0.0165	.	.	.
3	1753	3134	0.61899	0.0164	.	.	.
4	3134	4294	-0.16003	0.0145	.	.	.
5	4294	4594	-0.74138	0.0144	.	.	.
6	4594	7697	9.34333	0.0139	.	.	.
7	7697	10347	-0.14599	0.0143	.	.	.

---------- SYS=ASN-63 ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	6	27734.582905	4622.430484
RESIDUAL	4	7.382091	1.845523
UNCORRECTED TOTAL	10	27741.964996	
(CORRECTED TOTAL)	9	14794.094157	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	1.240752912	1.9685313177	-4.2246922779	6.7061981026
B	-0.213365065	0.2122262038	-0.8025914974	0.3758613666
C	0.028514035	0.0122282807	-0.0054366552	0.0624647261
D	-0.018275487	0.0254872215	-0.0890384007	0.0524874273
E	-0.000309112	0.0001785589	-0.0008048642	0.0001866403
F	0.000000157	0.0000002237	-0.0000004642	0.0000007779

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	781	1.00000	0.1866	0.186588	0.000012	0.006
2	781	930	-0.80922	0.1744	0.174048	0.000352	0.202

3	930	1217	0.92617	0.1769	0.177948	-0.001048	-0.592
4	1217	1358	-0.50871	0.1817	0.175628	0.006072	3.342
5	1358	1450	-0.34752	0.1772	0.198935	-0.021735	-12.266
6	1450	1585	0.46739	0.2189	0.209425	0.009475	4.329
7	1585	1693	-0.20000	0.1911	0.193070	-0.001970	-1.031
8	1693	1851	0.46296	0.1917	0.192685	-0.000985	-0.514
9	1851	1887	-0.77215	0.2005	0.178739	0.021761	10.853
10	1887	1923	0.00000	0.2145	0.228055	-0.013555	-6.319

---------- SYS=ASN-70 ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	6	119.45541158	19.90923526
RESIDUAL	2	0.00058723	0.00029361
UNCORRECTED TOTAL	8	119.45599881	
(CORRECTED TOTAL)	7	64.18968336	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	0.0218463199	0.00609012041	-.00435764119	0.04805028099
B	0.0948802807	0.04266164368	-.08867997361	0.27844053493
C	0.0232979526	0.00943226876	-.01728627017	0.06388217539
D	0.0238339372	0.01260854403	-.03041684523	0.07808471960
E	-.0002326897	0.00011062991	-.00070869698	0.00024331766
F	0.0000003870	0.00000045746	-.00000158130	0.00000235534

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	152	1.00000	0.0350	0.0349997	0.0000003	0.0009
2	152	402	0.64474	0.0353	0.0352999	0.0000001	0.0002
3	402	483	-0.67600	0.0342	0.0342276	-0.0000276	-0.0808
4	483	541	-0.28395	0.0356	0.0355356	0.0000644	0.1808
5	541	567	-0.55172	0.0370	0.0370202	-0.0000202	-0.0547
6	567	575	-0.69231	0.0399	0.0382730	0.0016270	4.0777
7	575	583	0.00000	0.0370	0.0394846	-0.0024846	-6.7150
8	583	594	0.37500	0.0427	0.0425299	0.0001701	0.3984

---------- SYS=ASN-99 ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	6	383.24385910	63.87397652
RESIDUAL	2	0.35975004	0.17987502
UNCORRECTED TOTAL	8	383.60360914	
(CORRECTED TOTAL)	7	61.21154176	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	0.0312275602	0.00549491168	0.00758460367	0.05487051665
B	0.1820348477	0.03618256478	0.02635212629	0.33771756921
C	0.0693993361	0.01765860401	-.00658033937	0.14537901155
D	-.0363124110	0.01151691632	-.08586624687	0.01324142483
E	-.0011134637	0.00047564600	-.00316002573	0.00093309836
F	0.0000020265	0.00000137434	-.00000388687	0.00000793985

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	157	1.00000	0.0464	0.0452072	0.0011928	2.5706
2	157	353	0.24841	0.0404	0.0426832	-0.0022832	-5.6515
3	353	538	-0.05612	0.0413	0.0401839	0.0011161	2.7023
4	538	781	0.31351	0.0433	0.0429980	0.0003020	0.6974
5	781	805	-0.90123	0.0570	0.0480138	0.0089862	15.7652
6	805	877	2.00000	0.0624	0.0637264	-0.0013264	-2.1256
7	877	933	-0.22222	0.0635	0.0655052	-0.0020052	-3.1578
8	933	1050	1.08929	0.0684	0.0676280	0.0007720	1.1286

---------- SYS=ASN-108 ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	5	560.63059524	112.12611905
RESIDUAL	0	0.00000000	0.00000000
UNCORRECTED TOTAL	5	560.63059524	
(CORRECTED TOTAL)	4	226.66710333	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	0.1578636452	0	0.15786364515	0.15786364515
B	-.1229443753	0	-.12294437533	-.12294437533
C	-.0226386425	0	-.02263864247	-.02263864247
D	0.0065149460	0	0.00651494598	0.00651494598
E	-.0000251335	0	-.00002513352	-.00002513352
F	0.0000011142	0	0.00000111416	0.00000111416

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	8	1.00000	0.1373	0.1373	3.46945E-18	2.52691E-15
2	8	39	2.87500	0.1048	0.1048	-3.46945E-18	-3.31054E-15
3	39	116	1.48387	0.0874	0.0874	-1.73472E-18	-1.98481E-15
4	116	332	1.80519	0.0943	0.0943	8.67362E-18	9.19790E-15
5	332	440	-0.50000	0.0872	0.0872	8.67362E-18	9.94681E-15

---------- SYS=ASQ-133 ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	6	2884.7700964	480.7950161
RESIDUAL	0	0.0000000	0.0000000
UNCORRECTED TOTAL	6	2884.7700964	
(CORRECTED TOTAL)	5	403.6845454	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	0.5067848917	0	0.50678489172	0.50678489172
B	0.0157039671	0	0.01570396708	0.01570396708
C	0.1149379953	0	0.11493799534	0.11493799534
D	-.0421892894	0	-.04218928944	-.04218928944
E	0.0000648061	0	0.00006480609	0.00006480609
F	-.0000168676	0	-.00001686763	-.00001686763

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	14	1.00000	0.5856	0.5856	-1.38778E-17	-2.36984E-15
2	14	33	0.35714	0.5862	0.5862	1.38778E-17	2.36742E-15
3	33	101	2.57895	0.4255	0.4255	-2.08167E-17	-4.89229E-15
4	101	168	-0.01471	0.3828	0.3828	6.93889E-18	1.81267E-15
5	168	249	0.20896	0.3535	0.3535	-4.16334E-17	-1.17775E-14
6	249	307	-0.28395	0.3355	0.3355	-5.55112E-17	-1.65458E-14

---------- SYS=ASW-32 ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	6	300.87807368	50.14634561
RESIDUAL	0	0.00000000	0.00000000
UNCORRECTED TOTAL	6	300.87807368	
(CORRECTED TOTAL)	5	54.90298664	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	0.001319622	0	0.0013196215	0.0013196215
B	3.402523866	0	3.4025238662	3.4025238662
C	1.679353266	0	1.6793532665	1.6793532665
D	-1.657279443	0	-1.6572794431	-1.6572794431
E	-0.074485255	0	-0.0744852551	-0.0744852551
F	0.000472229	0	0.0004722289	0.0004722289

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	12	1.00000	0.2338	0.2338	4.85723E-17	2.07751E-14
2	12	38	1.16667	0.1643	0.1643	2.77556E-17	1.68932E-14
3	38	86	0.84615	0.1524	0.1524	-3.46945E-17	-2.27654E-14
4	86	134	0.00000	0.0974	0.0974	2.08167E-17	2.13724E-14
5	134	184	0.04167	0.1441	0.1441	5.20417E-17	3.61150E-14
6	184	264	0.60000	0.1518	0.1518	8.32667E-17	5.48529E-14

---------- SYS=CP-1035N ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	6	209.24815220	34.87469203
RESIDUAL	0	0.00000000	0.00000000
UNCORRECTED TOTAL	6	209.24815220	
(CORRECTED TOTAL)	5	41.36682739	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	0.1600619731	0	0.16006197307	0.16006197307
B	-.1845185671	0	-.18451856709	-.18451856709
C	0.1531327144	0	0.15313271438	0.15313271438
D	-.2041390896	0	-.20413908964	-.20413908964
E	0.0052094070	0	0.00520940704	0.00520940704
F	-.0000486158	0	-.00004861585	-.00004861585

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	12	1.00000	0.1248	0.1248	0	0
2	12	38	1.16667	0.0903	0.0903	-6.93889E-18	-7.68427E-15
3	38	86	0.84615	0.1236	0.1236	-8.67362E-18	-7.01749E-15
4	86	134	0.00000	0.1287	0.1287	4.16334E-17	3.23492E-14
5	134	184	0.04167	0.1310	0.1310	1.38778E-17	1.05937E-14
6	184	264	0.60000	0.1154	0.1154	-2.25514E-17	-1.95419E-14

---------- SYS=JTIDS ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	5	1571.0420382	314.2084076
RESIDUAL	0	0.0000000	0.0000000
UNCORRECTED TOTAL	5	1571.0420382	
(CORRECTED TOTAL)	4	40.2575028	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR		ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	0.7228105396		0	0.72281053955	0.72281053955
B	-.3744574829		0	-.37445748291	-.37445748291
C	-.2036849818		0	-.20368498175	-.20368498175
D	0.2806883737		0	0.28068837373	0.28068837373
E	0.0014359721		0	0.00143597211	0.00143597211
F	0.0000091069		0	0.00000910691	0.00000910691

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	45	1.00000	0.4068	0.4068	2.08167E-17	5.11718E-15
2	45	121	0.68889	0.2764	0.2764	-3.46945E-17	-1.25523E-14
3	121	198	0.01316	0.2466	0.2466	-5.20417E-17	-2.11037E-14
4	198	270	-0.06494	0.2308	0.2308	2.42861E-17	1.05226E-14
5	270	327	-0.20833	0.2205	0.2205	-5.55112E-17	-2.51751E-14

----------SYS=LANNAV ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	6	87339.225542	14556.537590
RESIDUAL	1	0.005354	0.005354
UNCORRECTED TOTAL	7	87339.230896	
(CORRECTED TOTAL)	6	17386.822804	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	1.815537373	0.02193274964	1.5368598558	2.0942148897
B	-0.136509837	0.08143956615	-1.1712809649	0.8982612900
C	-0.001440080	0.00441573882	-0.0575464571	0.0546662979
D	0.000475466	0.00133388676	-0.0164728989	0.0174238315
E	0.000337788	0.00120426489	-0.0149636016	0.0156391778
F	-0.000001275	0.00000452195	-0.0000587312	0.0000561805

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	4	1.00000	1.7500	1.74019	0.00980909	0.560519
2	4	38	7.50000	1.3199	1.31992	-0.00002284	-0.001730
3	38	176	3.05882	1.0761	1.07609	0.00000639	0.000594
4	176	320	0.04348	0.9679	0.96814	-0.00024087	-0.024886
5	[illegible]	464	0.00000	0.9184	0.91806	0.00033823	0.036828
6	[illegible]4	608	0.00000	0.8854	0.88551	-0.00010702	-0.012087
7	608	724	-0.19444	0.8643	0.86430	-0.00000064	-0.000074

---------- SYS=LANTARP ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENLENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	6	64803.866662	10800.644444
RESIDUAL	1	0.014113	0.014113
UNCORRECTED TOTAL	7	64803.880775	
(CORRECTED TOTAL)	6	12795.420992	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	1.541585938	0.03429497993	1.1058339233	1.9773379532
B	-0.201283770	0.08644487134	-1.2996523050	0.8970847655
C	-0.004728681	0.00422865218	-0.0584579361	0.0490005732
D	0.001547595	0.00131046069	-0.0151031182	0.0181983090
E	0.001401953	0.00126344957	-0.0146514370	0.0174553435
F	-0.000005277	0.00000476124	-0.0000657729	0.0000552198

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	4	1.00000	1.4375	1.46059	-0.023090	-1.6063
2	4	38	7.50000	1.1286	1.12857	0.000030	0.0026
3	38	166	2.76471	0.9375	0.93751	-0.000012	-0.0013
4	166	310	0.12500	0.8490	0.84886	0.000137	0.0161
5	310	454	0.00000	0.8081	0.80781	0.000288	0.0357
6	454	598	0.00000	0.7795	0.77991	-0.000409	-0.0525
7	598	714	-0.19444	0.7619	0.76189	0.000006	0.0008

---------- SYS=LANTREC ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	5	11938.396467	2387.679293
RESIDUAL	0	0.000000	0.000000
UNCORRECTED TOTAL	5	11938.396467	
(CORRECTED TOTAL)	4	1483.530658	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	0.4997170701	0	0.49971707010	0.49971707010
B	-.0435003603	0	-.04350036028	-.04350036028
C	0.0438966071	0	0.04389660715	0.04389660715
D	-.0258765392	0	-.02587653915	-.02587653915
E	-.0001320020	0	-.00013200201	-.00013200201
F	-.0000005200	0	-.00000051995	-.00000051995

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	79	1.00000	0.4383	0.4383	1.38778E-17	3.16628E-15
2	79	271	1.43038	0.3353	0.3353	-4.85723E-17	-1.44862E-14
3	271	463	0.00000	0.2975	0.2975	-3.46945E-17	-1.16620E-14
4	463	655	0.00000	0.2865	0.2865	-6.93889E-17	-2.42195E-14
5	655	720	-0.66146	0.2693	0.2693	6.93889E-18	2.57664E-15

C.7.4 - Helicopter Programs

---------- SYS=HH-52----------

NOTE: THE RESIDUAL SS HAS FAILED TO CONVERGE IN THE SPECIFIED NUMBER OF ITERATIONS.

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	28	1.00000	1.577	.	.	.
2	28	43	-0.46429	1.104	.	.	.
3	43	60	0.13333	1.085	.	.	.
4	60	75	-0.11765	1.012	.	.	.
5	75	87	-0.20000	1.041	.	.	.
6	87	99	0.00000	1.055	.	.	.

---------- SYS=CH-46 ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	6	357821.38843	59636.89807
RESIDUAL	2	1791.63073	895.81536
UNCORRECTED TOTAL	8	359613.01916	
(CORRECTED TOTAL)	7	57764.44745	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	9.322454628	4.2707781297	-9.0534224310	27.698331687
B	-0.162306695	0.1497192053	-0.8065035190	0.481890130
C	-0.036788011	0.0341743064	-0.1838297990	0.110253777
D	-0.007432906	0.0424292453	-0.1899932201	0.175127408
E	-0.001451244	0.0021274502	-0.0106050243	0.007702536
F	0.000006080	0.0000092127	-0.0000335590	0.000045720

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	14	1.00000	7.541	6.63693	0.90407	11.989
2	14	50	1.57143	3.898	3.57457	0.32343	8.297
3	50	110	0.66667	2.766	3.06946	-0.30346	-10.971
4	110	195	0.41667	2.419	2.55480	-0.13580	-5.614

5	195	394	1.34118	1.986	1.98788	-0.00188	-0.095
6	394	486	-0.53769	2.236	2.34645	-0.11045	-4.940
7	486	576	-0.02174	2.370	2.03160	0.33840	14.279
8	576	624	-0.46667	2.547	2.55410	-0.00710	-0.279

---------- SYS=H-53 ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	6	619062.83448	103177.13908
RESIDUAL	2	15.93078	7.96539
UNCORRECTED TOTAL	8	619078.76526	
(CORRECTED TOTAL)	7	355155.11828	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	7.660410922	0.43240009023	5.7999230535	9.5208987900
B	-0.089077522	0.02743778554	-0.2071340818	0.0289790379
C	0.022361226	0.00706204652	-0.0080246415	0.0527470936
D	-0.001734750	0.00052040790	-0.0039739087	0.0005044095
E	-0.003510148	0.00137348874	-0.0094198578	0.0023995622
F	0.000022733	0.00000871121	-0.0000147491	0.0000602143

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	10	1.0000	6.752	6.75069	0.00131	0.019
2	10	141	12.1000	4.264	4.26402	-0.00002	-0.000
3	141	281	0.0687	3.762	3.76199	0.00001	0.000
4	281	293	-0.9143	3.382	3.28108	0.10092	2.984
5	293	323	1.5000	3.341	3.35137	-0.01037	-0.310
6	323	331	-0.7333	3.154	3.54594	-0.39194	-12.427
7	331	361	2.7500	3.685	3.67701	0.00799	0.217
8	361	367	-0.8000	3.947	3.59430	0.35270	8.936

---------- SYS=CH-47 ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	6	480190.32300	80031.72050
RESIDUAL	6	5670.21199	945.03533
UNCORRECTED TOTAL	12	485860.53499	
(CORRECTED TOTAL)	11	132801.70813	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	5.531826052	2.1708353906	0.21997937394	10.843672730
B	-0.011485309	0.0996756834	-.25538309584	0.232412478

C	0.024840378	0.0320394937	-.05355749494	0.103238252
D	-0.028148940	0.0222075562	-.08248891190	0.026191032
E	-0.001788743	0.0011816651	-.00468017517	0.001102690
F	0.000006452	0.0000059129	-.00000801607	0.000020921

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	18	1.00000	6.181	5.08695	1.09405	17.700
2	18	42	0.33333	5.226	4.74430	0.48170	9.217
3	42	66	0.00000	4.559	4.52097	0.03803	0.834
4	66	126	1.50000	3.459	3.18207	0.27693	8.006
5	126	198	0.20000	2.760	3.27897	-0.51897	-18.803
6	198	358	1.22222	2.307	2.46305	-0.15605	-6.764
7	358	442	-0.47500	2.313	2.47385	-0.16085	-6.954
8	442	585	0.70238	2.695	2.43170	0.26330	9.770
9	585	630	-0.68531	3.463	2.74814	0.71486	20.643
10	630	666	-0.20000	3.085	3.43485	-0.34985	-11.340
11	666	678	-0.66667	3.671	3.71654	-0.04554	-1.241
12	678	690	0.00000	3.852	4.48835	-0.63635	-16.520

---------- SYS=H-54 ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	5	21128.788908	4225.757782
RESIDUAL	0	0.000000	0.000000
UNCORRECTED TOTAL	5	21128.788908	
(CORRECTED TOTAL)	4	3891.650213	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	5.326885310	0	5.3268853100	5.3268853100
B	-0.115212040	0	-0.1152120399	-0.1152120399
C	0.067327205	0	0.0673272052	0.0673272052
D	-0.029514167	0	-0.0295141675	-0.0295141675
E	0.012730861	0	0.0127308607	0.0127308607
F	-0.000501738	0	-0.0005017380	-0.0005017380

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	6	1.00000	5.248	5.248	0	0
2	6	30	3.00000	3.388	3.388	-1.66533E-16	-4.91539E-15
3	30	60	0.25000	2.801	2.801	-5.55112E-17	-1.98183E-15
4	60	83	-0.23333	3.402	3.402	1.66533E-16	4.89516E-15
5	83	89	-0.73913	3.083	3.083	1.66533E-16	5.40167E-15

----------SYS=HH-60D----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	4	123892.22000	30973.05500
RESIDUAL	0	0.00000	0.00000
UNCORRECTED TOTAL	4	123892.22000	
(CORRECTED TOTAL)	3	24351.97000	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	9.211226549	0	9.2112265487	9.2112265487
B	-0.021459679	0	-0.0214596792	-0.0214596792
C	0.014681265	0	0.0146812647	0.0146812647
D	-0.002671138	0	-0.0026711380	-0.0026711380
E	-0.001209662	0	-0.0012096623	-0.0012096623
F	-0.000020933	0	-0.0000209333	-0.0000209333

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	3	1.00000	9.2	9.2	2.22045E-16	2.41353E-15
2	3	28	7.33333	7.1	7.1	1.11022E-16	1.56369E-15
3	28	63	0.40000	6.7	6.7	2.22045E-16	3.31410E-15
4	63	92	-0.17143	6.6	6.6	-9.99201E-16	-1.51394E-14

---------- SYS=SH-3 ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	6	72855.311085	12142.551847
RESIDUAL	3	121.002457	40.334152
UNCORRECTED TOTAL	9	72976.313542	
(CORRECTED TOTAL)	8	13013.690662	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	3.882573865	0.67198971344	1.7439666019	6.0211811279
B	-0.055720968	0.08630019881	-0.3303713510	0.2189294145
C	0.022655652	0.02306690396	-0.0507547695	0.0960660742
D	-0.002540528	0.01847087720	-0.0613240946	0.0562430388
E	-0.003812695	0.00276820656	-0.0126225128	0.0049971220
F	0.000040903	0.00002614513	-0.0000423035	0.0001241103

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	20	1.00000	3.327	3.22451	0.10249	3.080
2	20	69	1.45000	2.480	2.51039	-0.03039	-1.225
3	69	140	0.44898	2.319	2.32774	-0.00874	-0.377
4	140	185	-0.36620	1.811	1.78191	0.02909	1.607
5	185	221	-0.20000	1.870	1.80115	0.06885	3.682
6	221	257	0.00000	1.589	1.80421	-0.21521	-13.544
7	257	287	-0.16667	1.703	1.80007	-0.09707	-5.700
8	287	335	0.60000	1.930	1.82227	0.10773	5.582
9	335	350	-0.68750	2.144	1.92193	0.22207	10.358

C.7.5 - Tactical Armament Programs

---------- SYS=LLLGB ----------

ERROR: ON OBSERVATION 1, USE OF THE ABOVE PARAMETERS HAS RESULTED IN A DERIVATIVE OR RESIDUAL IN EXCESS OF 1E30. ITERATIONS TERMINATED.

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	1600	1.00000	0.0275	.	.	.
2	1600	4550	0.84375	0.0206	.	.	.
3	4550	8290	0.26780	0.0189	.	.	.
4	8290	17270	1.40107	0.0162	.	.	.
5	17270	26890	0.07127	0.0147	.	.	.
6	26890	41290	0.49688	0.0137	.	.	.
7	41290	56890	0.08333	0.0129	.	.	.
8	56890	72490	0.00000	0.0123	.	.	.
9	72490	88090	0.00000	0.0118	.	.	.
10	88090	100000	-0.23654	0.0115	.	.	.

---------- SYS=CEM ----------

ERROR: ON OBSERVATION 2, USE OF THE ABOVE PARAMETERS HAS RESULTED IN A DERIVATIVE OR RESIDUAL IN EXCESS OF 1E30. ITERATIONS TERMINATED.

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	172	1.00000	0.06924	.	.	.
2	172	1432	6.32558	0.03038	.	.	.
3	1432	7557	3.86111	0.01988	.	.	.
4	7557	21777	1.32163	0.01765	.	.	.
5	21777	50227	1.00070	0.01619	.	.	.
6	50227	85247	0.23093	0.01401	.	.	.
7	85247	134157	0.39663	0.01258	.	.	.
8	134157	171666	-0.23310	0.01181	.	.	.

---------- SYS=GBU-15 ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	6	40059.072127	6676.512021
RESIDUAL	3	21.214110	7.071370
UNCORRECTED TOTAL	9	40080.286237	
(CORRECTED TOTAL)	8	10225.399632	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	0.3258410059	0.17004513635	-.21532764050	0.86700965238
B	-.0972556418	0.15974854554	-.60565538797	0.41114410439
C	0.0159924614	0.00945987765	-.01411359919	0.04609852208
D	-.0046008434	0.00170780683	-.01003593862	0.00083425187
E	-.0002335444	0.00044380508	-.00164595403	0.00117886531
F	0.0000003796	0.00000046940	-.00000111426	0.00000187348

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	40	1.00000	0.1975	0.253870	-0.056370	-28.542
2	40	105	0.62500	0.2000	0.210782	-0.010782	-5.391
3	105	445	4.23077	0.1439	0.144107	-0.000207	-0.144
4	445	695	-0.26471	0.1483	0.137232	*0.011068*	7.463
5	695	1015	0.28000	0.1308	0.136507	-0.005707	-4.363
6	1015	1615	0.87500	0.1718	0.170567	0.001233	0.717
7	1615	2215	0.00000	0.1539	0.152271	0.001629	1.058
8	2215	2815	0.00000	0.1483	0.148119	0.000181	0.122
9	2815	3415	0.00000	0.1420	0.144948	-0.002948	-2.076

C.7.6 - Tactical Missile Programs

---------- SYS=AMRAAM ----------

ERROR: ON OBSERVATION 2, USE OF THE ABOVE PARAMETERS HAS RESULTED IN A DERIVATIVE OR RESIDUAL IN EXCESS OF 1E30. ITERATIONS TERMINATED.

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	194	1.00000	1.233	.	.	.
2	194	1251	4.44845	0.512	.	.	.
3	1251	3215	0.85809	0.342	.	.	.
4	3215	6211	0.52546	0.257	.	.	.
5	6211	9111	-0.03204	0.232	.	.	.
6	9111	12011	0.00000	0.194	.	.	.
7	12011	14911	0.00000	0.182	.	.	.
8	14911	17911	0.03448	0.170	.	.	.
9	17911	20911	0.00000	0.158	.	.	.
10	20911	24674	0.25433	0.155	.	.	.

---------- SYS=HARM ----------

ERROR: ON OBSERVATION 5, USE OF THE ABOVE PARAMETERS HAS RESULTED IN A DERIVATIVE OR RESIDUAL IN EXCESS OF 1E30. ITERATIONS TERMINATED.

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	80	1.00000	0.809	.	.	.
2	80	316	1.95000	0.517	.	.	.
3	316	712	0.67797	0.400	.	.	.
4	712	1399	0.73485	0.314	.	.	.
5	1399	3144	1.54003	0.249	.	.	.
6	3144	5612	0.41433	0.223	.	.	.
7	5612	7731	-0.14141	0.208	.	.	.
8	7731	9863	0.00613	0.197	.	.	.
9	9863	12863	0.40713	0.184	.	.	.
10	12863	15863	0.00000	0.177	.	.	.
11	15863	16961	-0.63400	0.196	.	.	.

---------- SYS=IIR ----------

ERROR: ON OBSERVATION 2, USE OF THE ABOVE PARAMETERS HAS RESULTED IN A DERIVATIVE OR RESIDUAL IN EXCESS OF 1E30. ITERATIONS TERMINATED.

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	200	1.00000	0.309	.	.	.
2	200	1100	3.50000	0.135	.	.	.
3	1100	3700	1.88889	0.083	.	.	.
4	3700	9429	1.20346	0.082	.	.	.
5	9429	18429	0.57095	0.062	.	.	.
6	18429	30429	0.33333	0.057	.	.	.
7	30429	42429	0.00000	0.055	.	.	.
8	42429	54429	0.00000	0.053	.	.	.
9	54429	60664	-0.48042	0.057	.	.	.

---------- SYS=AIM7F-R ----------

ERROR: ON OBSERVATION 4, USE OF THE ABOVE PARAMETERS HAS RESULTED IN A DERIVATIVE OR RESIDUAL IN EXCESS OF 1E30. ITERATIONS TERMINATED.

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	100	1.00000	0.741	.	.	.
2	100	325	1.25000	0.378	.	.	.
3	325	925	1.66667	0.199	.	.	.
4	925	1725	0.33333	0.169	.	.	.
5	1725	2825	0.37500	0.134	.	.	.
6	2825	4225	0.27273	0.116	.	.	.
7	4225	5125	-0.35714	0.111	.	.	.
8	5125	6269	0.27111	0.095	.	.	.

---------- SYS=AIM7F-GD ----------

ERROR: ON OBSERVATION 6, USE OF THE ABOVE PARAMETERS HAS RESULTED IN A DERIVATIVE OR RESIDUAL IN EXCESS OF 1E30. ITERATIONS TERMINATED.

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	15	1.00000	1.551	.	.	.
2	15	85	3.66667	0.379	.	.	.
3	85	295	2.00000	0.228	.	.	.
4	295	505	0.00000	0.195	.	.	.
5	505	1255	2.57143	0.130	.	.	.
6	1255	2565	0.74667	0.090	.	.	.

C.8 - Modified Alternative Three Non-linear Regression

This section contains the summary results produced by the non-linear regression procedure in SAS. The SAS program used to produce this run was discussed in Appendix B.8.

C.8.1 - Bomber Aircraft Programs

---------- SYS=B-1B ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	4	59466668.798	14866667.199
RESIDUAL	1	11308.012	11308.012
UNCORRECTED TOTAL	5	59477976.810	
(CORRECTED TOTAL)	4	17234615.032	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	420.3917395	39.242173043	-78.219311224	919.00279014
B	-0.3170991	0.032657183	-0.732041307	0.09784302
C	0.0100323	0.015469801	-0.186526980	0.20659160
D	-0.0023587	0.003120035	-0.042001814	0.03728451

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	1	1.00000	535.8	608.748	-72.948	-13.615
2	1	8	7.00000	260.3	260.459	-0.159	-0.061
3	8	18	1.42857	200.5	193.007	7.493	3.737
4	18	52	3.40000	142.0	141.970	0.030	0.021
5	52	100	1.41176	111.3	111.701	-0.401	-0.360

---------- SYS=B-52 ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	4	70010588.917	17502647.229
RESIDUAL	6	2390182.993	398363.832
UNCORRECTED TOTAL	10	72400771.910	
(CORRECTED TOTAL)	9	18070289.989	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	125.5056846	56.841932390	-13.581613802	264.59298299
B	-0.2192839	0.090311383	-0.440268029	0.00170028
C	-0.0293013	0.068014851	-0.195727795	0.13712513
D	0.0014296	0.020777630	-0.049411425	0.05227071

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	20	1.00000	112.5	79.5062	32.994	29.328
2	20	63	2.15000	37.0	45.7277	-8.728	-23.588
3	63	88	0.58140	28.6	45.3272	-16.727	-58.487
4	88	165	3.08000	32.3	30.1416	2.158	6.682
5	165	298	1.72727	23.4	29.6917	-6.292	-26.888
6	298	500	1.51880	28.4	26.4665	1.934	6.808
7	500	601	0.50000	27.3	28.7515	-1.452	-5.317
8	601	640	0.38614	27.3	28.5284	-1.228	-4.500
9	640	702	1.58974	35.4	22.7719	12.628	35.673
10	702	742	0.64516	35.0	26.2731	8.727	24.934

---------- SYS=B-58 ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	4	14238328.874	3559582.219
RESIDUAL	0	0.000	0.000
UNCORRECTED TOTAL	4	14238328.874	
(CORRECTED TOTAL)	3	1830393.074	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	153.3118110	0	153.31181104	153.31181104
B	0.1019116	0	0.10191164	0.10191164
C	-0.6367487	0	-0.63674867	-0.63674867
D	0.2367006	0	0.23670062	0.23670062

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	17	1.00000	93.86	93.86	0	0
2	17	53	2.11765	80.26	80.26	0	0
3	53	73	0.55556	73.16	73.16	-1.77636E-15	-2.42804E-15
4	73	103	1.50000	36.56	36.56	1.77636E-15	4.85874E-15

C.8.2 - Fighter Aircraft Programs

---------- SYS=A-10 ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	4	5168879.5108	1292219.8777
RESIDUAL	5	18337.8736	3667.5747
UNCORRECTED TOTAL	9	5187217.3844	
(CORRECTED TOTAL)	8	1226666.3049	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	15.71180805	3.9867335725	5.4637316781	25.959884415
B	-0.04925741	0.0381699048	-0.1473748550	0.048860029
C	-0.07311328	0.0258140398	-0.1394694237	-0.006757144
D	0.01137569	0.0042311512	0.0004993263	0.022252052

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	22	1.00000	12.37	12.5406	-0.1706	-1.379
2	22	75	2.40909	9.16	8.5510	0.6090	6.648
3	75	95	0.37736	8.20	11.2503	-3.0503	-37.198
4	95	195	5.00000	8.20	8.2345	-0.0345	-0.420
5	195	339	1.44000	7.82	7.5730	0.2470	3.158
6	339	483	1.00000	7.59	8.0608	-0.4708	-6.203
7	483	627	1.00000	7.82	7.7943	0.0257	0.329
8	627	687	0.41667	10.18	9.4882	0.6918	6.796
9	687	707	0.33333	13.64	9.7831	3.8569	28.276

---------- SYS=F-100 ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	4	11818388.687	2954597.172
RESIDUAL	1	17252.182	17252.182
UNCORRECTED TOTAL	5	11835640.869	
(CORRECTED TOTAL)	4	2086478.767	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	14.75080973	10.413362783	-117.56137779	147.06299725
B	-0.11038944	0.115895518	-1.58295789	1.36217900
C	-0.11993218	0.130943866	-1.78370494	1.54384058
D	0.00477863	0.005270482	-0.06218811	0.07174538

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	23	1.0000	6.51	9.39053	-2.8805	-44.243
2	23	568	23.6957	3.45	3.45000	-0.0000	-0.000
3	568	1161	1.0881	3.08	3.02404	0.0560	1.817
4	1161	1720	0.9427	3.10	3.00062	0.0994	3.206
5	1720	2277	0.9964	2.50	2.66722	-0.1672	-6.689

---------- SYS=F-101 ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	4	7063772.8462	1765943.2115
RESIDUAL	2	13086.9984	6543.4992
UNCORRECTED TOTAL	6	7076859.8446	
(CORRECTED TOTAL)	5	2200718.4643	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	28.73275276	7.1583791231	-2.0676050922	59.533110613
B	-0.21474999	0.0392090785	-0.3834548935	-0.046045089
C	-0.07641715	0.0568808341	-0.3211583156	0.168324014
D	0.01751292	0.0129113132	-0.0380405836	0.073066431

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	31	1.00000	16.85	15.4567	1.39332	8.269
2	31	115	2.70968	7.58	8.3628	-0.78281	-10.327
3	115	424	3.67857	6.91	6.8862	0.02379	0.344
4	424	630	0.66667	5.76	5.7187	0.04126	0.716
5	630	714	0.40777	5.27	5.9077	-0.63767	-12.100
6	714	807	1.10714	5.22	4.5483	0.67168	12.868

---------- SYS=F-102 ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	4	4462706.4660	1115676.6165
RESIDUAL	0	0.0000	0.0000
UNCORRECTED TOTAL	4	4462706.4660	
(CORRECTED TOTAL)	3	1795723.5179	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	29.37248470	0	29.372484697	29.372484697
B	-0.38590304	0	-0.385903040	-0.385903040
C	-0.01258317	0	-0.012583174	-0.012583174
D	0.00343420	0	0.003434196	0.003434196

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	37	1.00000	11.66	11.66	-4.44089E-16	-3.80866E-15
2	37	145	2.91892	5.17	5.17	3.33067E-16	6.44230E-15
3	145	707	5.20370	3.50	3.50	1.66533E-16	4.75810E-15
4	707	847	0.24911	2.21	2.21	-1.60982E-15	-7.28427E-14

---------- SYS=F-106 ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	4	4765078.8733	1191269.7183
RESIDUAL	0	0.0000	0.0000
UNCORRECTED TOTAL	4	4765078.8733	
(CORRECTED TOTAL)	3	480903.3427	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	107.9899447	0	107.98994473	107.98994473
B	-0.3855099	0	-0.38550994	-0.38550994
C	-0.1277521	0	-0.12775213	-0.12775213
D	0.0277680	0	0.02776795	0.02776795

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	42	1.00000	34.19	34.19	0	0
2	42	130	2.09524	10.54	10.54	1.55431E-15	1.47468E-14
3	130	175	0.51136	11.64	11.64	1.55431E-15	1.33532E-14
4	175	340	3.66667	7.59	7.59	3.33067E-16	4.38823E-15

---------- SYS=F-15AB ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	4	10242273.331	2560568.333
RESIDUAL	2	5368.728	2684.364
UNCORRECTED TOTAL	6	10247642.059	
(CORRECTED TOTAL)	5	1585918.021	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	33.00956607	3.5087725636	17.912370364	48.106761782
B	-0.13217983	0.0291921752	-0.257784999	-0.006574655
C	0.00511343	0.0208959692	-0.084795658	0.095022515
D	-0.00057844	0.0036076978	-0.016101278	0.014944405

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	30	1.00000	25.597	24.5132	1.08383	4.2342
2	30	92	2.06667	19.556	19.9511	-0.39512	-2.0205
3	92	164	1.16129	17.183	17.8575	-0.67446	-3.9252
4	164	272	1.50000	17.126	16.7910	0.33496	1.9558
5	272	296	0.22222	16.021	15.7434	0.27764	1.7330
6	296	404	4.50000	16.272	16.2683	0.00374	0.0230

---------- SYS=F-15CD ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	4	8383640.2339	2095910.0585
RESIDUAL	4	35208.9123	8802.2281
UNCORRECTED TOTAL	8	8418849.1462	
(CORRECTED TOTAL)	7	752208.0946	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	12.58028608	2.6059631246	5.3450704194	19.815501747
B	-0.22344210	0.1956881553	-0.7667521718	0.319867967
C	0.52846678	0.4274828221	-0.6583997503	1.715333309
D	-0.22305618	0.2070370306	-0.7978753503	0.351762995

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	97	1.00000	17.249	16.9172	0.3318	1.9236
2	97	175	0.80412	15.588	16.6559	-1.0679	-6.8508
3	175	235	0.76923	15.508	16.5086	-1.0006	-6.4522
4	235	277	0.70000	17.665	15.4607	2.2043	12.4785
5	277	313	0.85714	19.943	18.2735	1.6695	8.3715
6	313	352	1.08333	19.308	20.8823	-1.5743	-8.1537
7	352	388	0.92308	21.954	19.5223	2.4317	11.0763
8	388	436	1.33333	21.017	20.9404	0.0766	0.3643

---------- SYS=F-15E ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	4	14001335.938	3500333.985
RESIDUAL	2	31440.598	15720.299
UNCORRECTED TOTAL	6	14032776.537	
(CORRECTED TOTAL)	5	172346.387	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	24.45302341	5.2661696489	1.7942752589	47.111771555
B	-0.58548971	1.1367227974	-5.4764668911	4.305487470
C	0.91118363	2.0141430321	-7.7550695980	9.577436851
D	-0.38971056	0.8671843642	-4.1209447252	3.341523603

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	60	1.00000	20.544	20.1017	0.44228	2.1529
2	60	132	1.20000	19.203	19.2030	0.00000	0.0000
3	132	228	1.33333	17.608	17.6080	-0.00000	-0.0000
4	228	324	1.00000	16.175	17.0696	-0.89464	-5.5310
5	324	420	1.00000	16.041	16.7439	-0.70294	-4.3821
6	420	516	1.00000	17.927	16.4985	1.42850	7.9684

---------- SYS=F-16AB ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	4	5506165.2105	1376541.3026
RESIDUAL	1	71871.5295	71871.5295
UNCORRECTED TOTAL	5	5578036.7400	
(CORRECTED TOTAL)	4	338023.5480	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	20.61348844	12.374621862	-136.61845695	177.84543382
B	-0.27484174	0.463715151	-6.16680644	5.61712297
C	0.07634874	0.879571876	-11.09949151	11.25218899
D	-0.00358540	0.410067668	-5.21390519	5.20673438

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	105	1.00000	10.14	10.0868	0.05322	0.525
2	105	250	1.38095	7.74	8.3252	-0.58520	-7.561
3	250	425	1.20690	8.04	6.9207	1.11928	13.921
4	425	605	1.02857	5.05	5.9162	-0.86619	-17.152
5	605	725	0.66667	5.13	4.7607	0.36935	7.200

---------- SYS=F-16E ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	4	47698330.421	11924582.605
RESIDUAL	6	318515.201	53085.867
UNCORRECTED TOTAL	10	48016845.623	
(CORRECTED TOTAL)	9	1747028.765	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	11.53047455	3.8707457009	2.0590941839	21.001854913
B	-0.26208935	0.8643464471	-2.3770704412	1.852891742
C	0.41345526	1.5024837872	-3.2629927777	4.089903299
D	-0.15866546	0.6149134821	-1.6633056334	1.345974712

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	120	1.00000	9.86	11.2164	-1.3564	-13.756
2	120	264	1.20000	10.58	11.8721	-1.2921	-12.212
3	264	414	1.04167	14.55	11.2935	3.2565	22.382
4	414	630	1.44000	11.93	11.8429	0.0871	0.730
5	630	846	1.00000	11.28	10.9881	0.2919	2.588
6	846	1062	1.00000	11.02	10.9674	0.0526	0.477
7	1062	1278	1.00000	10.88	10.9510	-0.0710	-0.653
8	1278	1494	1.00000	10.69	10.9375	-0.2475	-2.315
9	1494	1710	1.00000	10.61	10.9259	-0.3159	-2.977
10	1710	1926	1.00000	10.54	10.9158	-0.3758	-3.565

C.8.3 - Electronics Programs

---------- SYS=ARC-109V ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	4	66.727156462	16.681789116
RESIDUAL	1	0.016917268	0.016917268
UNCORRECTED TOTAL	5	66.744073730	
(CORRECTED TOTAL)	4	29.010182832	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	0.0159605141	0.00586251125	-.05852855384	0.09044958197
B	0.1184559828	0.06575925142	-.71708106568	0.95399303137
C	-.0275524341	0.01453107962	-.21218433170	0.15707946354
D	0.0105163011	0.00482914855	-.05084286029	0.07187546256

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	4	1.00000	0.0487	0.0166784	0.0320216	65.7527
2	4	28	6.00000	0.0393	0.0390682	0.0002318	0.5898
3	28	107	3.29167	0.0285	0.0287686	-0.0002686	-0.9425
4	107	333	2.86076	0.0313	0.0312762	0.0000238	0.0759
5	333	441	0.47788	0.0303	0.0303098	-0.0000098	-0.0325

---------- SYS=ARC-54 ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	4	4663.5182872	1165.8795718
RESIDUAL	3	2.6826555	0.8942185
UNCORRECTED TOTAL	7	4666.2009427	
(CORRECTED TOTAL)	6	1109.4069615	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	0.0374671127	0.00525603013	0.02073979678	0.05419442855
B	-.1100038840	0.01613980148	-.16136880225	-.05863896581
C	0.0032297260	0.01024858274	-.02938638854	0.03584584060
D	-.0003479754	0.00090847104	-.00323918453	0.00254323366

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	900	1.0000	0.0210	0.0202485	0.00075147	3.5784
2	900	1753	0.9478	0.0165	0.0173637	-0.00086371	-5.2346
3	1753	3134	1.6190	0.0164	0.0164541	-0.00005411	-0.3299
4	3134	4294	0.8400	0.0145	0.0154872	-0.00098723	-6.8085
5	4294	4594	0.2586	0.0144	0.0149745	-0.00057452	-3.9897
6	4594	7697	10.3433	0.0139	0.0138999	0.00000009	0.0006
7	7697	10347	0.8540	0.0143	0.0140814	0.00021864	1.529J

---------- SYS=ASN-63 ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	4	27727.704513	6931.926128
RESIDUAL	6	14.260483	2.376747
UNCORRECTED TOTAL	10	27741.964996	
(CORRECTED TOTAL)	9	14794.094157	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER

A	0.1473430711	0.01848939300	0.10210112360	0.19258501862
B	0.0110769420	0.01874353687	-.03478687362	0.05694075761
C	0.0542800582	0.02007166477	0.00516642831	0.10339368800
D	-.0237623145	0.00844562143	-.04442802058	-.00309660840

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	781	1.00000	0.1866	0.186616	-0.000016	-0.0088
2	781	930	0.19078	0.1744	0.169289	0.005111	2.9309
3	930	1217	1.92617	0.1769	0.178462	-0.001562	-0.8829
4	1217	1358	0.49129	0.1817	0.185294	-0.003594	-1.9782
5	1358	1450	0.65248	0.1772	0.191787	-0.014587	-8.2321
6	1450	1585	1.46739	0.2189	0.196867	0.022033	10.0652
7	1585	1693	0.80000	0.1911	0.197078	-0.005978	-3.1281
8	1693	1851	1.46296	0.1917	0.198179	-0.006479	-3.3798
9	1851	1887	0.22785	0.2005	0.174179	0.026321	13.1278
10	1887	1923	1.00000	0.2145	0.201723	0.012777	5.9566

---------- SYS=ASN-70 ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	4	119.44605374	29.86151344
RESIDUAL	4	0.00994507	0.00248627
UNCORRECTED TOTAL	8	119.45599881	
(CORRECTED TOTAL)	7	64.18968336	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	0.0322894109	0.00190455419	0.02700159230	0.03757722951
B	0.0003491408	0.00729291290	-.01989895755	0.02059723918
C	0.0350827560	0.02223282003	-.02664461317	0.09681012510
D	-.0155475768	0.01043692524	-.04452473468	0.01342958113

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	152	1.00000	0.0350	0.0349860	0.00001405	0.0401
2	152	402	1.64474	0.0353	0.0353080	-0.00000804	-0.0228
3	402	483	0.32400	0.0342	0.0343348	-0.00013484	-0.3943
4	483	541	0.71605	0.0356	0.0360134	-0.00041341	-1.1613
5	541	567	0.44828	0.0370	0.0350423	0.00195771	5.2911
6	567	575	0.30769	0.0399	0.0343338	0.00556620	13.9504
7	575	583	1.00000	0.0370	0.0366433	0.00035675	0.9642
8	583	594	1.37500	0.0427	0.0364939	0.00620608	14.5341

---------- SYS=ASN-99 ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	4	377.79901903	94.44975476
RESIDUAL	4	5.80459011	1.45114753
UNCORRECTED TOTAL	8	383.60360914	
(CORRECTED TOTAL)	7	61.21154176	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	0.0422568171	0.02166309700	-.01788876871	0.10240240291
B	-.0524338786	0.14815162948	-.46376317948	0.35889542235
C	0.0555403392	0.11164882445	-.25444229870	0.36552297704
D	-.0044947878	0.02836463211	-.08324656620	0.07425699062

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	157	1.00000	0.0464	0.0420196	0.0043804	9.441
2	157	353	1.24841	0.0404	0.0446279	-0.0042279	-10.465
3	353	538	0.94388	0.0413	0.0412358	0.0000642	0.155
4	538	781	1.31351	0.0433	0.0459040	-0.0026040	-6.014
5	781	805	0.09877	0.0570	0.0308784	0.0261216	45.827
6	805	877	3.00000	0.0624	0.0694296	-0.0070296	-11.265
7	877	933	0.77778	0.0635	0.0389539	0.0245461	38.655
8	933	1050	2.08929	0.0684	0.0572374	0.0111626	16.320

---------- SYS=ASN-108 ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	4	560.44783167	140.11195792
RESIDUAL	1	0.18276357	0.18276357
UNCORRECTED TOTAL	5	560.63059524	
(CORRECTED TOTAL)	4	226.66710333	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	0.0870537668	0.01960837869	-.16209029278	0.33619782639
B	0.0143034991	0.04476375754	-.55446480427	0.58307180239
C	-.0341408919	0.03573379601	-.48817450394	0.41989272024
D	0.0122068141	0.01078759014	-.12486030626	0.14927393439

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	8	1.00000	0.1373	0.086342	0.0509578	37.1142
2	8	39	3.87500	0.1048	0.106436	-0.0016362	-1.5613
3	39	116	2.48387	0.0874	0.088877	-0.0014768	-1.6897
4	116	332	2.80519	0.0943	0.094149	0.0001515	0.1607
5	332	440	0.50000	0.0872	0.087201	-0.0000015	-0.0017

---------- SYS=ASQ-133 ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	4	2881.6655470	720.4163867
RESIDUAL	2	3.1045494	1.5522747
UNCORRECTED TOTAL	6	2884.7700964	
(CORRECTED TOTAL)	5	403.6845454	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	0.8332392236	0.13240040025	0.26356002142	1.4029184257
B	-.1710693183	0.04571182154	-.36775357285	0.0256149362
C	0.0144429374	0.04825545860	-.19318582428	0.2220716991
D	-.0033197376	0.01055400950	-.04873047425	0.0420909991

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	14	1.00000	0.5856	0.650345	-0.064745	-11.056
2	14	33	1.35714	0.5862	0.509327	0.076873	13.114
3	33	101	3.57895	0.4255	0.425572	-0.000072	-0.017
4	101	168	0.98529	0.3828	0.380973	0.001827	0.477
5	168	249	1.20896	0.3535	0.357924	-0.004424	-1.251
6	249	307	0.71605	0.3355	0.334144	0.001356	0.404

---------- SYS=ASW-32 ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	4	297.64022248	74.41005562
RESIDUAL	2	3.23785120	1.61892560
UNCORRECTED TOTAL	6	300.87807368	
(CORRECTED TOTAL)	5	54.90298664	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	0.2619618586	0.17582125599	-0.4945442595	1.0184679768
B	-.5831542777	0.55996678201	-2.9925233506	1.8262147953
C	0.6240044721	0.67866403320	-2.2960832635	3.5440922077
D	-.2020645653	0.24257811890	-1.2458054375	0.8416763069

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	12	1.00000	0.2338	0.209222	0.024578	10.512
2	12	38	2.16667	0.1643	0.148447	0.015853	9.649
3	38	86	1.84615	0.1524	0.160313	-0.007913	-5.193
4	86	134	1.00000	0.0974	0.122968	-0.025568	-26.250
5	134	184	1.04167	0.1441	0.121075	0.023025	15.979
6	184	264	1.60000	0.1518	0.150903	0.000897	0.591

---------- SYS=CP-1035N ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	4	208.77722624	52.19430656
RESIDUAL	2	0.47092596	0.23546298
UNCORRECTED TOTAL	6	209.24815220	
(CORRECTED TOTAL)	5	41.36682739	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	0.1441177358	0.05725212293	-0.1022209735	0.3904564451
B	-.1133723800	0.31036400704	-1.4487755931	1.2220308331
C	0.1630960443	0.37179165468	-1.4366119083	1.7628039969
D	-.0722983037	0.13460877802	-0.6514794929	0.5068828855

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	12	1.00000	0.1248	0.139403	-0.014603	-11.701
2	12	38	2.16667	0.0903	0.105224	-0.014924	-16.527
3	38	86	1.84615	0.1236	0.113302	0.010298	8.332
4	86	134	1.00000	0.1287	0.129633	-0.000933	-0.725
5	134	184	1.04167	0.1310	0.128968	0.002032	1.551
6	184	264	1.60000	0.1154	0.117671	-0.002271	-1.968

---------- SYS=JTIDS ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	4	1571.0286520	392.7571630
RESIDUAL	1	0.0133862	0.0133862
UNCORRECTED TOTAL	5	1571.0420382	
(CORRECTED TOTAL)	4	40.2575028	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	0.7123306580	0.00950327022	0.59158210655	0.83307920944
B	-.1878889323	0.01738888387	-.40883209065	0.03305422614
C	-.0266094010	0.03022747827	-.41067973992	0.35746093789
D	0.0057233491	0.01161755959	-.14188936301	0.15333606118

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	45	1.00000	0.4068	0.406661	0.00013935	0.03426
2	45	121	1.68889	0.2764	0.276378	0.00002173	0.00786
3	121	198	1.01316	0.2466	0.247429	-0.00082856	-0.33599
4	198	270	0.93506	0.2308	0.229547	0.00125288	0.54284
5	270	327	0.79167	0.2205	0.221091	-0.00059143	-0.26822

---------- SYS=LANNAV ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	4	87339.224642	21834.806160
RESIDUAL	3	0.006254	0.002085
UNCORRECTED TOTAL	7	87339.230896	
(CORRECTED TOTAL)	6	17386.822804	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	1.808394264	0.00518113163	1.7919053125	1.8248832153
B	-0.113344103	0.00044802870	-0.1147699547	-0.1119182520
C	-0.000418780	0.00007843678	-0.0006684054	-0.0001691553
D	0.000107106	0.00001226956	0.0000680579	0.0001461536

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	4	1.00000	1.7500	1.74286	0.00713790	0.407880
2	4	38	8.50000	1.3199	1.31997	-0.00007416	-0.005619
3	38	176	4.05882	1.0761	1.07608	0.00002032	0.001888
4	176	320	1.04348	0.9679	0.96811	-0.00020612	-0.021295
5	320	464	1.00000	0.9184	0.91804	0.00035571	0.038732
6	464	608	1.00000	0.8854	0.88567	-0.00027431	-0.030981
7	608	724	0.80556	0.8643	0.86414	0.00016354	0.018922

---------- SYS=LANTARP ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	4	64803.844449	16200.961112
RESIDUAL	3	0.036326	0.012109
UNCORRECTED TOTAL	7	64803.880775	
(CORRECTED TOTAL)	6	12795.420992	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	1.507492289	0.01249992066	1.4677112911	1.5472732861
B	-0.105073600	0.00124837207	-0.1090465440	-0.1011006558
C	-0.000217308	0.00024912533	-0.0010101495	0.0005755332
D	0.000091352	0.00003222838	-0.0000112149	0.0001939188

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	4	1.00000	1.4375	1.45610	-0.018604	-1.2942
2	4	38	8.50000	1.1286	1.12860	0.000002	0.0002
3	38	166	3.76471	0.9375	0.93750	0.000001	0.0001

4	166	310	1.12500	0.8490	0.84923	-0.000233	-0.0275
5	310	454	1.00000	0.8081	0.80710	0.001003	0.1242
6	454	598	1.00000	0.7795	0.78013	-0.000630	-0.0809
7	598	714	0.80556	0.7619	0.76210	-0.000201	-0.0264

---------- SYS=LANTREC ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	4	11937.506442	2984.376611
RESIDUAL	1	0.890024	0.890024
UNCORRECTED TOTAL	5	11938.396467	
(CORRECTED TOTAL)	4	1483.530658	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	0.6975337602	0.04062413242	0.18136353367	1.2137039867
B	-.1481376166	0.01677415086	-.36126997736	0.0649947442
C	0.0081061307	0.02132797809	-.26288715890	0.2790994202
D	-.0025687334	0.00637124702	-.08352179806	0.0783843313

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	79	1.00000	0.4383	0.436295	0.0020054	0.4575
2	79	271	2.43038	0.3353	0.335300	0.0000000	0.0000
3	271	463	1.00000	0.2975	0.301071	-0.0035709	-1.2003
4	463	655	1.00000	0.2865	0.283227	0.0032728	1.1424
5	655	720	0.33854	0.2693	0.269300	0.0000000	0.0000

C.8.4 - Helicopter Programs

---------- SYS=HH-52 ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	4	3109.7383954	777.4345988
RESIDUAL	2	1.2236296	0.6118148
UNCORRECTED TOTAL	6	3110.9620250	
(CORRECTED TOTAL)	5	731.1991835	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	2.447061845	0.10877403273	1.9790398141	2.9150838754
B	-0.338949052	0.09140992248	-0.7322585254	0.0543604216
C	0.301034252	0.22801949617	-0.6800652343	1.2821337381
D	-0.160697748	0.13534712264	-0.7430558130	0.4216603162

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	28	1.00000	1.577	1.57536	0.001644	0.1043
2	28	43	0.53571	1.104	1.10307	0.000929	0.0842
3	43	60	1.13333	1.085	1.09549	-0.010494	-0.9672
4	60	75	0.88235	1.012	1.06133	-0.049326	-4.8741
5	75	87	0.80000	1.041	1.01204	0.028964	2.7823
6	87	99	1.00000	1.055	0.99484	0.060164	5.7028

---------- SYS=CH-46 ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	4	357538.09265	89384.52316
RESIDUAL	4	2074.92651	518.73163
UNCORRECTED TOTAL	8	359613.01916	
(CORRECTED TOTAL)	7	57764.44745	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	9.324267189	2.1761136537	3.2824888363	15.366045541
B	-0.200928871	0.0460698874	-0.3288376533	-0.073020088
C	-0.048511096	0.0612143899	-0.2184671895	0.121444998
D	0.007479847	0.0202602672	-0.0487709116	0.063730606

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	14	1.00000	7.541	6.49539	1.04561	13.8657
2	14	50	2.57143	3.898	3.65599	0.24201	6.2085
3	50	110	1.66667	2.766	2.99520	-0.22920	-8.2863
4	110	195	1.41667	2.419	2.60321	-0.18421	-7.6152
5	195	394	2.34118	1.986	1.98293	0.00307	0.1545
6	394	486	0.46231	2.236	2.41894	-0.18294	-8.1814
7	486	576	0.97826	2.370	2.05307	0.31693	13.3726
8	576	624	0.53333	2.547	2.21548	0.33152	13.0159

---------- SYS=H-53 ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	4	618986.38829	154746.59707
RESIDUAL	4	92.37697	23.09424
UNCORRECTED TOTAL	8	619078.76526	
(CORRECTED TOTAL)	7	355155.11828	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL

			LOWER	UPPER
A	8.098072212	0.72234356536	6.0925520916	10.103592332
B	-0.146330073	0.01828271100	-0.1970903296	-0.095569816
C	0.002260500	0.00391699415	-0.0086146717	0.013135673
D	-0.000227730	0.00028415485	-0.0010166599	0.000561199

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	10	1.0000	6.752	6.78831	-0.03631	-0.538
2	10	141	13.1000	4.264	4.26419	-0.00019	-0.005
3	141	281	1.0687	3.762	3.75529	0.00671	0.178
4	281	293	0.0857	3.382	3.54158	-0.15958	-4.719
5	293	323	2.5000	3.341	3.58741	-0.24641	-7.375
6	323	331	0.2667	3.154	3.48261	-0.32861	-10.419
7	331	361	3.7500	3.685	3.55020	0.13480	3.658
8	361	367	0.2000	3.947	3.42571	0.52129	13.207

---------- SYS=CH-47 ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	4	477000.62362	119250.15591
RESIDUAL	8	8859.91137	1107.48892
UNCORRECTED TOTAL	12	485860.53499	
(CORRECTED TOTAL)	11	132801.70813	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	9.200466776	2.5130927138	2.4052086758	13.995724876
B	-0.195294087	0.0689680426	-0.3543362130	-0.036251961
C	0.033445360	0.0676542618	-0.1225671527	0.189457872
D	-0.018542753	0.0235750313	-0.0729073966	0.035821892

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	18	1.00000	6.181	5.94007	0.24093	3.898
2	18	42	1.33333	5.226	4.41779	0.80821	15.465
3	42	66	1.00000	4.559	4.00040	0.55860	12.253
4	66	126	2.50000	3.459	2.91588	0.54312	15.702
5	126	198	1.20000	2.760	3.25683	-0.49683	-18.001
6	198	358	2.22222	2.307	2.48869	-0.18169	-7.875
7	358	442	0.52500	2.313	2.74306	-0.43006	-18.593
8	442	585	1.70238	2.695	2.47444	0.22056	8.184
9	585	630	0.31469	3.463	2.47991	0.98309	28.388
10	630	666	0.80000	3.085	2.55051	0.53449	17.325
11	666	678	0.33333	3.671	2.43987	1.23113	33.537
12	678	690	1.00000	3.852	2.52592	1.32608	34.426

---------- SYS=H-54 ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	4	21064.153629	5266.038407
RESIDUAL	1	64.635279	64.635279
UNCORRECTED TOTAL	5	21128.788908	
(CORRECTED TOTAL)	4	3891.650213	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	5.760323665	1.7612913546	-16.618644286	28.139291617
B	-0.042795431	0.0943792030	-1.241977584	1.156386722
C	-0.145122422	0.0944582009	-1.345308322	1.055063478
D	0.027000751	0.0191574627	-0.216413970	0.270415472

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	6	1.00000	5.248	5.14546	0.10254	1.954
2	6	30	4.00000	3.388	3.38139	0.00661	0.195
3	30	60	1.25000	2.801	2.89297	-0.09197	-3.283
4	60	83	0.76667	3.402	3.19526	0.20674	6.077
5	83	89	0.26087	3.083	4.05495	-0.97195	-31.526

---------- SYS=HH-60D ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	4	123892.22000	30973.05500
RESIDUAL	0	0.00000	0.00000
UNCORRECTED TOTAL	4	123892.22000	
(CORRECTED TOTAL)	3	24351.97000	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	9.241541094	0	9.2415410940	9.2415410940
B	-0.065204779	0	-0.0652047792	-0.0652047792
C	-0.015984625	0	-0.0159846252	-0.0159846252
D	0.001387580	0	0.0013875804	0.0013875804

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	3	1.00000	9.2	9.2	0	0
2	3	28	8.33333	7.1	7.1	-4.44089E-16	-6.25478E-15
3	28	63	1.40000	6.7	6.7	2.22045E-16	3.31410E-15
4	63	92	0.82857	6.6	6.6	2.10942E-15	3.19610E-14

---------- SYS=SH-3 ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	4	72737.149293	18184.287323
RESIDUAL	5	239.164249	47.832850
UNCORRECTED TOTAL	9	72976.313542	
(CORRECTED TOTAL)	8	13013.690662	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	4.612074568	0.64985554711	2.9415919149	6.2825572210
B	-0.222589525	0.04552856269	-0.3396227250	-0.1055563250
C	0.079873489	0.04739695099	-0.0419624864	0.2017094643
D	-0.022717363	0.01567293890	-0.0630053511	0.0175706251

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	20	1.00000	3.327	3.36668	-0.03968	-1.193
2	20	69	2.45000	2.480	2.50866	-0.02866	-1.155
3	69	140	1.44898	2.319	2.25627	0.06273	2.705
4	140	185	0.63380	1.811	1.83582	-0.02482	-1.370
5	185	221	0.80000	1.870	1.83774	0.03226	1.725
6	221	257	1.00000	1.589	1.86427	-0.27527	-17.324
7	257	287	0.83333	1.703	1.76064	-0.05764	-3.385
8	287	335	1.60000	1.930	1.91738	0.01262	0.654
9	335	350	0.31250	2.144	1.43668	0.70732	32.991

C.8.5 - Tactical Armament Programs

---------- SYS=LLLGB ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	4	220659.18760	55164.79690
RESIDUAL	6	7.22990	1.20498
UNCORRECTED TOTAL	10	220666.41749	
(CORRECTED TOTAL)	9	31936.24632	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	0.0818757671	0.00314381181	0.07418313116	0.08956840304
B	-.1720492881	0.00365210298	-.18098566859	-.16311290758
C	0.0011655335	0.00364019053	-.00774169833	0.01007276524
D	-.0004554186	0.00110583461	-.00316130034	0.00225046318

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	1600	1.00000	0.0275	0.0279118	-0.00041177	-1.4973
2	1600	4550	1.84375	0.0206	0.0208354	-0.00023535	-1.1425
3	4550	8290	1.26780	0.0189	0.0182885	0.00061147	3.2353
4	8290	17270	2.40107	0.0162	0.0161889	0.00001110	0.0685
5	17270	26890	1.07127	0.0147	0.0147784	-0.00007840	-0.5333
6	26890	41290	1.49688	0.0137	0.0137170	-0.00001704	-0.1244
7	41290	56890	1.08333	0.0129	0.0128783	0.00002169	0.1681
8	56890	72490	1.00000	0.0123	0.0122767	0.00002327	0.1892
9	72490	88090	1.00000	0.0118	0.0118286	-0.00002857	-0.2421
10	88090	100000	0.76346	0.0115	0.0114990	0.00000100	0.0087

---------- SYS=CEM ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	4	1106605.2347	276651.3087
RESIDUAL	4	507.9642	126.9911
UNCORRECTED TOTAL	8	1107113.1989	
(CORRECTED TOTAL)	7	367517.1256	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	0.1182807993	0.04281435771	-.00058930616	0.23715090482
B	-.1953660986	0.02765118984	-.27213707052	-.11859512670
C	0.0042048544	0.00577218897	-.01182109457	0.02023080339
D	-.0015240464	0.00100615476	-.00431754206	0.00126944925

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	172	1.00000	0.06924	0.0543398	0.0149002	21.5197
2	172	1432	7.32558	0.03038	0.0237469	0.0066331	21.8339
3	1432	7557	4.86111	0.01988	0.0205487	-0.0006687	-3.3636
4	7557	21777	2.32163	0.01765	0.0186074	-0.0009574	-5.4242
5	21777	50227	2.00070	0.01619	0.0157053	0.0004847	2.9937
6	50227	85247	1.23093	0.01401	0.0139354	0.0000746	0.5326
7	85247	134157	1.39663	0.01258	0.0126965	-0.0001165	-0.9257
8	134157	171666	0.76690	0.01181	0.0118134	-0.0000034	-0.0285

---------- SYS=GBU-15 ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	4	39978.151274	9994.537818
RESIDUAL	5	102.134963	20.426993
UNCORRECTED TOTAL	9	40080.286237	
(CORRECTED TOTAL)	8	10225.399632	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	0.1633332802	0.06426867496	-.00187221379	0.32853877411
B	-.0477695586	0.04952308717	-.17507086183	0.07953174458
C	0.0411646747	0.01544402810	0.00146511206	0.08086423744
D	-.0069403884	0.00256213937	-.01352648185	-.00035429489

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	40	1.00000	0.1975	0.157506	0.039994	20.250
2	40	105	1.62500	0.2000	0.163887	0.036113	18.057
3	105	445	5.23077	0.1439	0.144310	-0.000410	-0.285
4	445	695	0.73529	0.1483	0.142751	0.005549	3.742
5	695	1015	1.28000	0.1308	0.156380	-0.025580	-19.556
6	1015	1615	1.87500	0.1718	0.169315	0.002485	1.447
7	1615	2215	1.00000	0.1539	0.147449	0.006451	4.192
8	2215	2815	1.00000	0.1483	0.146902	0.001398	0.943
9	2815	3415	1.00000	0.1420	0.146475	-0.004475	-3.152

C.8.6 - Tactical Missile Programs

---------- SYS=AMRAAM ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	4	3265460.2541	816365.0635
RESIDUAL	6	1384.6149	230.7691
UNCORRECTED TOTAL	10	3266844.8690	
(CORRECTED TOTAL)	9	183807.0285	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	5.045800208	0.44796748004	3.9496624812	6.1419379352
B	-0.343071789	0.00881099198	-0.3646315255	-0.3215120530
C	-0.006370446	0.00629273118	-0.0217682160	0.0090273232
D	0.000737621	0.00092399967	-0.0015233265	0.0029985683

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	194	1.00000	1.233	1.23420	-0.0011974	-0.0971
2	194	1251	5.44845	0.512	0.51208	-0.0000816	-0.0159
3	1251	3215	1.85809	0.342	0.33892	0.0030849	0.9020
4	3215	6211	1.52546	0.257	0.26118	-0.0041762	-1.6250
5	6211	9111	0.96796	0.232	0.22403	0.0079688	3.4348
6	9111	12011	1.00000	0.194	0.19975	-0.0057522	-2.9650
7	12011	14911	1.00000	0.182	0.18344	-0.0014418	-0.7922
8	14911	17911	1.03448	0.170	0.17087	-0.0008719	-0.5129
9	17911	20911	1.00000	0.158	0.16139	-0.0033882	-2.1444
10	20911	24674	1.25433	0.155	0.15079	0.0042130	2.7181

---------- SYS=HARM ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	4	1585156.2088	396289.0522
RESIDUAL	7	884.5096	126.3585
UNCORRECTED TOTAL	11	1586040.7184	
(CORRECTED TOTAL)	10	338342.8883	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	1.656765461	0.20064117653	1.1823206601	2.1312102614
B	-0.219511233	0.01429558754	-0.2533151973	-0.1857072686
C	-0.017378620	0.00958535466	-0.0400445639	0.0052873242
D	0.002964776	0.00293975166	-0.0039866878	0.0099162399

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	80	1.00000	0.809	0.775906	0.0330938	4.0907
2	80	316	2.95000	0.517	0.463062	0.0539379	10.4329
3	316	712	1.67797	0.400	0.372500	0.0275001	6.8750
4	712	1399	1.73485	0.314	0.311730	0.0022704	0.7230
5	1399	3144	2.54003	0.249	0.252338	-0.0033383	-1.3407
6	3144	5612	1.41433	0.223	0.225839	-0.0028389	-1.2731
7	5612	7731	0.85859	0.208	0.214597	-0.0065974	-3.1718
8	7731	9863	1.00613	0.197	0.197977	-0.0009767	-0.4958
9	9863	12863	1.40713	0.184	0.179491	0.0045089	2.4505
10	12863	15863	1.00000	0.177	0.176606	0.0003938	0.2225
11	15863	16961	0.36600	0.196	0.185725	0.0102746	5.2421

---------- SYS=IIR ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	4	2027375.5260	506843.8815
RESIDUAL	5	4088.5793	817.7159
UNCORRECTED TOTAL	9	2031464.1053	
(CORRECTED TOTAL)	8	458719.8690	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	0.6997821589	0.51718579264	-.62966697608	2.0292312940
B	-.2178424771	0.06174588977	-.37656303924	-0.0591219149
C	-.0277469244	0.01548013010	-.06753928894	0.0120454400
D	0.0044028397	0.00384180432	-.00547268954	0.0142783690

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	200	1.00000	0.309	0.256951	0.052049	16.844
2	200	1100	4.50000	0.135	0.139712	-0.004712	-3.490
3	1100	3700	2.88889	0.083	0.093260	-0.010260	-12.361
4	3700	9429	2.20346	0.082	0.073523	0.008477	10.338
5	9429	18429	1.57095	0.062	0.064431	-0.002431	-3.921
6	18429	30429	1.33333	0.057	0.057873	-0.000873	-1.531
7	30429	42429	1.00000	0.055	0.055641	-0.000641	-1.166
8	42429	54429	1.00000	0.053	0.051917	0.001083	2.043
9	54429	60664	0.51958	0.057	0.055606	0.001394	2.445

---------- SYS=AIM7F-R ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	4	115016.42335	28754.10584
RESIDUAL	4	135.16155	33.79039
UNCORRECTED TOTAL	8	115151.58490	
(CORRECTED TOTAL)	7	6543.29279	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	2.847495934	0.30411208374	2.0031568524	3.6918350160
B	-0.380338179	0.02240005663	-0.4425298647	-0.3181464925
C	-0.007523489	0.02304299988	-0.0715002476	0.0564532696
D	-0.001839594	0.00652258621	-0.0199489516	0.0162697634

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	100	1.00000	0.741	0.775384	-0.034384	-4.6402
2	100	325	2.25000	0.378	0.332053	0.045947	12.1553
3	325	925	2.66667	0.199	0.203751	-0.004751	-2.3872
4	925	1725	1.33333	0.169	0.169503	-0.000503	-0.2979
5	1725	2825	1.37500	0.134	0.136034	-0.002034	-1.5179
6	2825	4225	1.27273	0.116	0.115450	0.000550	0.4744
7	4225	5125	0.64286	0.111	0.109276	0.001724	1.5529
8	5125	6269	1.27111	0.095	0.095361	-0.000361	-0.3797

---------- SYS=AIM7F-GD ----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	4	28537.332819	7134.333205
RESIDUAL	2	83.825206	41.912603
UNCORRECTED TOTAL	6	28621.158025	
(CORRECTED TOTAL)	5	7732.207921	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	2.161801150	0.61963713513	-.50431155141	4.8279138512
B	-0.402137892	0.09402236555	-.80668792457	0.0024121400
C	-0.015704954	0.06233739100	-.28392404580	0.2525141387
D	0.002839980	0.01204498436	-.04898597396	0.0546659345

LOT	XL	XU	R	AUC	UCP	DIF	PCT
1	0	15	1.00000	1.551	1.20108	0.349915	22.561
2	15	85	4.66667	0.379	0.45504	-0.076040	-20.063
3	85	295	3.00000	0.228	0.24236	-0.014356	-6.296
4	295	505	1.00000	0.195	0.18112	0.013883	7.120
5	505	1255	3.57143	0.130	0.12610	0.003903	3.002
6	1255	2565	1.74667	0.090	0.09102	-0.001020	-1.133

C.9 - Basic Learning Curve Non-linear Regression

This section contains the summary results produced by the non-linear regression procedure in SAS. The SAS program used to produce this run was discussed in Appendix B.9.

C.9.1 - Bomber Aircraft Programs

----------SYS=B-1B----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	2	59459243.599	29729621.800
RESIDUAL	3	18733.211	6244.404
UNCORRECTED TOTAL	5	59477976.810	
(CORRECTED TOTAL)	4	17234615.032	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	397.5616196	17.590158123	341.58094132	453.54229778
B	-0.2944904	0.011736989	-0.33184339	-0.25713745

LOT	XL	XU	AUC	UCP	DIF	PCT
1	0	1	535.8	563.503	-27.703	-5.1705
2	1	8	260.3	268.592	-8.292	-3.1857
3	8	18	200.5	188.655	11.845	5.9079
4	18	52	142.0	141.844	0.156	0.1100
5	52	100	111.3	111.783	-0.483	-0.4338

----------SYS=B-52----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	2	69617419.295	34808709.647
RESIDUAL	8	2783352.615	347919.077
UNCORRECTED TOTAL	10	72400771.910	
(CORRECTED TOTAL)	9	18070289.989	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	95.12495044	42.528246791	-2.9463086649	193.19620954
B	-0.21081760	0.079539299	-0.3942373265	-0.02739788

LOT	XL	XU	AUC	UCP	DIF	PCT
1	0	20	112.5	64.0969	48.4031	43.025
2	20	63	37.0	43.9196	-6.9196	-18.702
3	63	88	28.6	38.2738	-9.6738	-33.824
4	88	165	32.3	34.4274	-2.1274	-6.586
5	165	298	23.4	30.2952	-6.8952	-29.467
6	298	500	28.4	26.9882	1.4118	4.971
7	500	601	27.3	25.1565	2.1435	7.852
8	601	640	27.3	24.5219	2.7781	10.176
9	640	702	35.4	24.1219	11.2781	31.859
10	702	742	35.0	23.7508	11.2492	32.141

----------SYS=B-58----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	2	13658345.536	6829172.768
RESIDUAL	2	579983.338	289991.669
UNCORRECTED TOTAL	4	14238328.874	
(CORRECTED TOTAL)	3	1830393.074	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	157.0740981	75.105407035	-166.08193672	480.23013298
B	-0.2335523	0.138510861	-0.82952293	0.36241843

LOT	XL	XU	AUC	UCP	DIF	PCT
1	0	17	93.86	105.742	-11.882	-12.659
2	17	53	80.26	69.434	10.826	13.489
3	53	73	73.16	59.758	13.402	18.319
4	73	103	36.56	55.281	-18.721	-51.207

C.9.2 - Fighter Aircraft Programs

----------SYS=A-10----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	2	5143666.2635	2571833.1317
RESIDUAL	7	43551.1209	6221.5887
UNCORRECTED TOTAL	9	5187217.3844	
(CORRECTED TOTAL)	8	1226666.3049	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	10.44782824	2.9696356900	3.4256992951	17.469957183
B	-0.04599938	0.0493414332	-0.1626742658	0.070675507

LOT	XL	XU	AUC	UCP	DIF	PCT
1	0	22	12.37	9.50007	2.86993	23.2007
2	22	75	9.16	8.76264	0.39736	4.3380
3	75	95	8.20	8.51770	-0.31770	-3.8744
4	95	195	8.20	8.31830	-0.11830	-1.4427
5	195	339	7.82	8.08476	-0.26476	-3.3857
6	339	483	7.59	7.92317	-0.33317	-4.3896
7	483	627	7.82	7.81356	0.00644	0.0823
8	627	687	10.18	7.75224	2.42776	23.8484
9	687	707	13.64	7.73107	5.90893	43.3206

----------SYS=F-100----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	2	11794615.199	5897307.599
RESIDUAL	3	41025.670	13675.223
UNCORRECTED TOTAL	5	11835640.869	
(CORRECTED TOTAL)	4	2086478.767	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	6.522601084	1.6964681180	1.1235912984	11.921610870
B	-0.113747451	0.0390394559	-0.2379905194	0.010495618

LOT	XL	XU	AUC	UCP	DIF	PCT
1	0	23	6.51	5.15193	1.35807	20.8612
2	23	568	3.45	3.51092	-0.06092	-1.7657

3	568	1161	3.08	3.03035	0.04965	1.6120
4	1161	1720	3.10	2.85429	0.24571	7.9263
5	1720	2277	2.50	2.74886	-0.24886	-9.9546

----------SYS=F-101----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	2	7050997.4292	3525498.7146
RESIDUAL	4	25862.4154	6465.6038
UNCORRECTED TOTAL	6	7076859.8446	
(CORRECTED TOTAL)	5	2200718.4643	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	23.80267039	5.0404305235	9.8083810870	37.796959692
B	-0.22694100	0.0379518949	-0.3323109280	-0.121571074

LOT	XL	XU	AUC	UCP	DIF	PCT
1	0	31	16.85	14.1241	2.7259	16.177
2	31	115	7.58	9.1482	-1.5682	-20.689
3	115	424	6.91	6.8006	0.1094	1.584
4	424	630	5.76	5.7506	0.0094	0.163
5	630	714	5.27	5.4332	-0.1632	-3.097
6	714	807	5.22	5.2828	-0.0628	-1.202

----------SYS=F-102----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	2	4453106.4209	2226553.2105
RESIDUAL	2	9600.0451	4800.0225
UNCORRECTED TOTAL	4	4462706.4660	
(CORRECTED TOTAL)	3	1795723.5179	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	24.49644778	5.5200056068	0.74551965680	48.247375905
B	-0.33004967	0.0393944065	-.49955197862	-0.160547353

LOT	XL	XU	AUC	UCP	DIF	PCT
1	0	37	11.66	11.1039	0.55611	4.769
2	37	145	5.17	5.6942	-0.52418	-10.139
3	145	707	3.50	3.4506	0.04943	1.412
4	707	847	2.21	2.7251	-0.51508	-23.307

----------SYS=F-106----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	2	4716695.7571	2358347.8785
RESIDUAL	2	48383.1162	24191.5581
UNCORRECTED TOTAL	4	4765078.8733	
(CORRECTED TOTAL)	3	480903.3427	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	105.6439907	18.564826447	25.765111978	185.52286948
B	-0.4877353	0.043911227	-0.676672104	-0.29879843

LOT	XL	XU	AUC	UCP	DIF	PCT
1	0	42	34.19	33.3133	0.8767	2.564
2	42	130	10.54	12.4638	-1.9238	-18.252
3	130	175	11.64	9.1230	2.5170	21.623
4	175	340	7.59	7.1389	0.4511	5.943

----------SYS=F-15AB----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	2	10240631.316	5120315.658
RESIDUAL	4	7010.743	1752.686
UNCORRECTED TOTAL	6	10247642.059	
(CORRECTED TOTAL)	5	1585918.021	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	31.95366041	2.4340528283	25.195737787	38.711583030
B	-0.11784042	0.0147920050	-0.158909051	-0.076771783

LOT	XL	XU	AUC	UCP	DIF	PCT
1	0	30	25.597	24.2610	1.33599	5.2193
2	30	92	19.556	19.8077	-0.25165	-1.2868

3	92	164	17.183	18.0709	-0.88792	-5.1674
4	164	272	17.126	16.9650	0.16104	0.9403
5	272	296	16.021	16.4224	-0.40144	-2.5057
6	296	404	16.272	16.0308	0.24120	1.4823

----------SYS=F-15CD----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	2	8333341.5389	4166670.7695
RESIDUAL	6	85507.6073	14251.2679
UNCORRECTED TOTAL	8	8418849.1462	
(CORRECTED TOTAL)	7	752208.0946	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	13.47963026	3.0855581257	5.9295360664	21.029724456
B	0.05386192	0.0461614635	-0.0590911924	0.166815035

LOT	XL	XU	AUC	UCP	DIF	PCT
1	0	97	17.249	16.3646	0.8844	5.127
2	97	175	15.588	17.5503	-1.9623	-12.588
3	175	235	15.508	17.9520	-2.4440	-15.760
4	235	277	17.665	18.1704	-0.5054	-2.861
5	277	313	19.943	18.3102	1.6328	8.187
6	313	352	19.308	18.4287	0.8793	4.554
7	352	388	21.954	18.5352	3.4188	15.573
8	388	436	21.017	18.6427	2.3743	11.297

----------SYS=F-15E----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	2	13997992.955	6998996.478
RESIDUAL	4	34783.582	8695.895
UNCORRECTED TOTAL	6	14032776.537	
(CORRECTED TOTAL)	5	172346.387	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	25.35535866	3.6487036830	15.225070246	35.485647068
B	-0.06958201	0.0269457573	-0.144394417	0.005230390

LOT	XL	XU	AUC	UCP	DIF	PCT
1	0	60	20.544	20.4958	0.04823	0.2347
2	60	132	19.203	18.4898	0.71319	3.7139
3	132	228	17.608	17.6822	-0.07416	-0.4212
4	228	324	16.175	17.1550	-0.98001	-6.0588
5	324	420	16.041	16.7995	-0.75850	-4.7285
6	420	516	17.927	16.5320	1.39499	7.7815

----------SYS=F-16AB----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	2	5475416.1108	2737708.0554
RESIDUAL	3	102620.6292	34206.8764
UNCORRECTED TOTAL	5	5578036.7400	
(CORRECTED TOTAL)	4	338023.5480	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	22.07459257	8.5312299747	-5.0760468231	49.225231966
B	-0.20707532	0.0718796714	-0.4358323696	0.021681739

LOT	XL	XU	AUC	UCP	DIF	PCT
1	0	105	10.14	10.6199	-0.4799	-4.733
2	105	250	7.74	7.6092	0.1308	1.689
3	250	425	8.04	6.6312	1.4088	17.522
4	425	605	5.05	6.0660	-1.0160	-20.119
5	605	725	5.13	5.7478	-0.6178	-12.043

----------SYS=F-16E----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	2	47668708.478	23834354.239
RESIDUAL	8	348137.145	43517.143
UNCORRECTED TOTAL	10	48016845.623	
(CORRECTED TOTAL)	9	1747028.765	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	12.83252442	3.0230650421	5.8612566788	19.803792165
B	-0.02117649	0.0350270408	-0.1019497728	0.059596788

LOT	XL	XU	AUC	UCP	DIF	PCT
1	0	120	9.86	11.8462	-1.9862	-20.144
2	120	264	10.58	11.4866	-0.9066	-8.569
3	264	414	14.55	11.3451	3.2049	22.027
4	414	630	11.93	11.2416	0.6884	5.770
5	630	846	11.28	11.1586	0.1214	1.076
6	846	1062	11.02	11.0978	-0.0778	-0.706
7	1062	1278	10.88	11.0497	-0.1697	-1.560
8	1278	1494	10.69	11.0101	-0.3201	-2.994
9	1494	1710	10.61	10.9763	-0.3663	-3.452
10	1710	1926	10.54	10.9469	-0.4069	-3.860

C.9.2 - Electronics Programs

----------SYS=ARC-109V----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	2	66.650250587	33.325125294
RESIDUAL	3	0.093823143	0.031274381
UNCORRECTED TOTAL	5	66.744073730	
(CORRECTED TOTAL)	4	29.010182832	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	0.0311517458	0.00711689517	0.00850222688	0.05380126466
B	-.0012134599	0.04277992471	-.13736057031	0.13493365047

LOT	XL	XU	AUC	UCP	DIF	PCT
1	0	4	0.0487	0.0311372	0.0175628	36.0633
2	4	28	0.0393	0.0310515	0.0082485	20.9886
3	28	107	0.0285	0.0309953	-0.0024953	-8.7556
4	107	333	0.0313	0.0309503	0.0003497	1.1172
5	333	441	0.0303	0.0309274	-0.0006274	-2.0708

----------SYS=ARC-54----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	2	4660.0577861	2330.0288930
RESIDUAL	5	6.1431566	1.2286313
UNCORRECTED TOTAL	7	4666.2009427	
(CORRECTED TOTAL)	6	1109.4069615	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	0.0400966747	0.00603910116	0.02457289599	0.05562045349
B	-.1181189900	0.01782682583	-.16394364051	-.07229433954

LOT	XL	XU	AUC	UCP	DIF	PCT
1	0	900	0.0210	0.0203585	0.00064148	3.0547
2	900	1753	0.0165	0.0171902	-0.00069016	-4.1828
3	1753	3134	0.0164	0.0159847	0.00041534	2.5326
4	3134	4294	0.0145	0.0151942	-0.00069418	-4.7874
5	4294	4594	0.0144	0.0148678	-0.00046784	-3.2489
6	4594	7697	0.0139	0.0143295	-0.00042946	-3.0897
7	7697	10347	0.0143	0.0136811	0.00061894	4.3283

----------SYS=ASN-63----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	2	27708.765769	13854.382885
RESIDUAL	8	33.199227	4.149903
UNCORRECTED TOTAL	10	27741.964996	
(CORRECTED TOTAL)	9	14794.094157	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	0.1873636108	0.02200872886	0.13661090141	0.23811632018
B	-.0011536203	0.01945646701	-.04602074654	0.04371350595

LOT	XL	XU	AUC	UCP	DIF	PCT
1	0	781	0.1866	0.186144	0.000456	0.2443
2	781	930	0.1744	0.185910	-0.011510	-6.5999
3	930	1217	0.1769	0.185862	-0.008962	-5.0661
4	1217	1358	0.1817	0.185822	-0.004122	-2.2688
5	1358	1450	0.1772	0.185804	-0.008604	-4.8554
6	1450	1585	0.2189	0.185787	0.033113	15.1269
7	1585	1693	0.1911	0.185771	0.005329	2.7888
8	1693	1851	0.1917	0.185754	0.005946	3.1018
9	1851	1887	0.2005	0.185742	0.014758	7.3604
10	1887	1923	0.2145	0.185738	0.028762	13.4087

----------SYS=ASN-70----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	2	119.43754853	59.71877426
RESIDUAL	6	0.01845028	0.00307505

UNCORRECTED TOTAL	8	119.45599881
(CORRECTED TOTAL)	7	64.18968336

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	0.0345300666	0.00129289467	0.03136646505	0.03769366818
B	0.0035818910	0.00702335300	-.01360364714	0.02076742906

LOT	XL	XU	AUC	UCP	DIF	PCT
1	0	152	0.0350	0.0350316	-0.0000316	-0.0902
2	152	402	0.0353	0.0352282	0.0000718	0.2035
3	402	483	0.0342	0.0352917	-0.0010917	-3.1921
4	483	541	0.0356	0.0353103	0.0002897	0.8139
5	541	567	0.0370	0.0353203	0.0016797	4.5398
6	567	575	0.0399	0.0353241	0.0045759	11.4684
7	575	583	0.0370	0.0353259	0.0016741	4.5246
8	583	594	0.0427	0.0353279	0.0073721	17.2648

----------SYS=ASN-99----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	2	373.20568145	186.60284073
RESIDUAL	6	10.39792769	1.73298795
UNCORRECTED TOTAL	8	383.60360914	
(CORRECTED TOTAL)	7	61.21154176	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	0.0286102060	0.01535491364	-.00896194123	0.06618235333
B	0.0783227073	0.08833989279	-.13783737933	0.29448279389

LOT	XL	XU	AUC	UCP	DIF	PCT
1	0	157	0.0464	0.0394240	0.0069760	15.034
2	157	353	0.0404	0.0440759	-0.0036759	-9.099
3	353	538	0.0413	0.0461060	-0.0048060	-11.637
4	538	781	0.0433	0.0475500	-0.0042500	-9.815
5	781	805	0.0570	0.0482613	0.0087387	15.331
6	805	877	0.0624	0.0484830	0.0139170	22.303
7	877	933	0.0635	0.0487628	0.0147372	23.208
8	933	1050	0.0684	0.0491112	0.0192888	28.200

----------SYS=ASN-108----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	2	559.83537858	279.91768929
RESIDUAL	3	0.79521666	0.26507222
UNCORRECTED TOTAL	5	560.63059524	
(CORRECTED TOTAL)	4	226.66710333	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	0.1071388021	0.02368643872	0.03175671085	0.18252089330
B	-.0273349515	0.04133497659	-.15888351453	0.10421361147

LOT	XL	XU	AUC	UCP	DIF	PCT
1	0	8	0.1373	0.104063	0.0332367	24.2074
2	8	39	0.1048	0.098515	0.0062847	5.9969
3	39	116	0.0874	0.095246	-0.0078461	-8.9773
4	116	332	0.0943	0.092515	0.0017848	1.8927
5	332	440	0.0872	0.091051	-0.0038505	-4.4158

----------SYS=ASQ-133----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	2	2881.4910612	1440.7455306
RESIDUAL	4	3.2790352	0.8197588
UNCORRECTED TOTAL	6	2884.7700964	
(CORRECTED TOTAL)	5	403.6845454	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	0.8273763041	0.07992882397	0.60546131471	1.0492912935
B	-.1588452324	0.02006626778	-.21455736956	-0.1031330953

LOT	XL	XU	AUC	UCP	DIF	PCT
1	0	14	0.5856	0.646800	-0.061200	-10.451
2	14	33	0.5862	0.503755	0.082445	14.064
3	33	101	0.4255	0.427960	-0.002460	-0.578
4	101	168	0.3828	0.380548	0.002252	0.588
5	168	249	0.3535	0.354677	-0.001177	-0.333
6	249	307	0.3355	0.338551	-0.003051	-0.909

----------SYS=ASW-32----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	2	294.11789514	147.05894757
RESIDUAL	4	6.76017854	1.69004464
UNCORRECTED TOTAL	6	300.87807368	
(CORRECTED TOTAL)	5	54.90298664	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	0.1760301399	0.08792128925	-.06807519032	0.42013547019
B	-.0424103596	0.10217631956	-.32609346350	0.24127274423

LOT	XL	XU	AUC	UCP	DIF	PCT
1	0	12	0.2338	0.165439	0.068361	29.239
2	12	38	0.1643	0.153903	0.010397	6.328
3	38	86	0.1524	0.147936	0.004464	2.929
4	86	134	0.0974	0.144266	-0.046866	-48.118
5	134	184	0.1441	0.142005	0.002095	1.454
6	184	264	0.1518	0.139964	0.011836	7.797

----------SYS=CP-1035N----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	2	208.02749775	104.01374888
RESIDUAL	4	1.22065445	0.30516361
UNCORRECTED TOTAL	6	209.24815220	
(CORRECTED TOTAL)	5	41.36682739	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	0.1130722942	0.03120846788	0.02642486869	0.19971971966
B	0.0130187763	0.05589748321	-.14217541741	0.16821297010

LOT	XL	XU	AUC	UCP	DIF	PCT
1	0	12	0.1248	0.115289	0.009511	7.621
2	12	38	0.0903	0.117837	-0.027537	-30.495
3	38	86	0.1236	0.119274	0.004326	3.500
4	86	134	0.1287	0.120195	0.008505	6.608
5	134	184	0.1310	0.120779	0.010221	7.802
6	184	264	0.1154	0.121318	-0.005918	-5.128

----------SYS=JTIDS----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	2	1570.5474784	785.2737392
RESIDUAL	3	0.4945598	0.1648533
UNCORRECTED TOTAL	5	1571.0420382	
(CORRECTED TOTAL)	4	40.2575028	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	0.6962203056	0.03042583085	0.59939009890	0.79305051229
B	-.2052710954	0.00952282092	-.23557747301	-.17496471786

LOT	XL	XU	AUC	UCP	DIF	PCT
1	0	45	0.4068	0.401024	0.0057755	1.4197
2	45	121	0.2764	0.283703	-0.0073026	-2.6420
3	121	198	0.2466	0.246404	0.0001960	0.0795
4	198	270	0.2308	0.227427	0.0033728	1.4614
5	270	327	0.2205	0.216210	0.0042899	1.9456

----------SYS=LANNAV----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	2	87339.063553	43669.531777
RESIDUAL	5	0.167343	0.033469
UNCORRECTED TOTAL	7	87339.230896	
(CORRECTED TOTAL)	6	17386.822804	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	1.827897570	0.00782092731	1.8077935279	1.8480016125
B	-0.115451960	0.00076222757	-0.1174113003	-0.1134926204

LOT	XL	XU	AUC	UCP	DIF	PCT
1	0	4	1.7500	1.76085	-0.010846	-0.61976
2	4	38	1.3199	1.31040	0.009498	0.71959
3	38	176	1.0761	1.07693	-0.000834	-0.07748
4	176	320	0.9679	0.96898	-0.001081	-0.11173
5	320	464	0.9184	0.91806	0.000343	0.03731
6	464	608	0.8854	0.88518	0.000216	0.02438
7	608	724	0.8643	0.86307	0.001228	0.14207

----------SYS=LANTARP----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	2	64803.725383	32401.862691
RESIDUAL	5	0.155392	0.031078
UNCORRECTED TOTAL	7	64803.880775	
(CORRECTED TOTAL)	6	12795.420992	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	1.528228736	0.00742280092	1.5091480955	1.5473093768
B	-0.107486040	0.00086312970	-0.1097047534	-0.1052673266

LOT	XL	XU	AUC	UCP	DIF	PCT
1	0	4	1.4375	1.47523	-0.037732	-2.6248
2	4	38	1.1286	1.12086	0.007742	0.6860
3	38	166	0.9375	0.93803	-0.000532	-0.0567
4	166	310	0.8490	0.85026	-0.001261	-0.1485
5	310	454	0.8081	0.80716	0.000935	0.1157
6	454	598	0.7795	0.77962	-0.000120	-0.0154
7	598	714	0.7619	0.76116	0.000736	0.0966

----------SYS=LANTREC----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	2	11937.333986	5968.666993
RESIDUAL	3	1.062480	0.354160
UNCORRECTED TOTAL	5	11938.396467	
(CORRECTED TOTAL)	4	1483.530658	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	0.6954062484	0.02324498901	0.62142907086	0.76938342594
B	-.1424665459	0.00603056463	-.16165881785	-.12327427399

LOT	XL	XU	AUC	UCP	DIF	PCT
1	0	79	0.4383	0.435150	0.0031499	0.7187
2	79	271	0.3353	0.336229	-0.0009286	-0.2769
3	271	463	0.2975	0.300389	-0.0028890	-0.9711
4	463	655	0.2865	0.282602	0.0038981	1.3606
5	655	720	0.2693	0.274188	-0.0048880	-1.8151

C.9.4 - Helicopter Programs

----------SYS=HH-52----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	2	3107.9156123	1553.9578061
RESIDUAL	4	3.0464127	0.7616032
UNCORRECTED TOTAL	6	3110.9620250	
(CORRECTED TOTAL)	5	731.1991835	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	2.493367272	0.11979054150	2.1607799099	2.8259546347
B	-0.209425262	0.01619817133	-0.2543979870	-0.1644525370

LOT	XL	XU	AUC	UCP	DIF	PCT
1	0	28	1.577	1.56954	0.007462	0.4732
2	28	43	1.104	1.18293	-0.078933	-7.1497
3	43	60	1.085	1.09344	-0.008439	-0.7778
4	60	75	1.012	1.03255	-0.020550	-2.0306
5	75	87	1.041	0.99358	0.047422	4.5554
6	87	99	1.055	0.96519	0.089810	8.5128

----------SYS=CH-46----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	2	353636.25318	176818.12659
RESIDUAL	6	5976.76599	996.12766
UNCORRECTED TOTAL	8	359613.01916	
(CORRECTED TOTAL)	7	57764.44745	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	7.913197352	2.6222009519	1.4968981360	14.329496569
B	-0.229146650	0.0608097538	-0.3779428649	-0.080350436

LOT	XL	XU	AUC	UCP	DIF	PCT
1	0	14	7.541	5.60723	1.93377	25.6434
2	14	50	3.898	3.63688	0.26112	6.6988
3	50	110	2.766	2.91930	-0.15330	-5.5423
4	110	195	2.419	2.51009	-0.09109	-3.7657
5	195	394	1.986	2.16268	-0.17668	-8.8961

6	394	486	2.236	1.96262	0.27338	12.2261
7	486	576	2.370	1.87954	0.49046	20.6943
8	576	624	2.547	1.82718	0.71982	28.2616

----------SYS=H-53----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	2	618899.61680	309449.80840
RESIDUAL	6	179.14846	29.85808
UNCORRECTED TOTAL	8	619078.76526	
(CORRECTED TOTAL)	7	355155.11828	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	6.843657436	0.32662952658	6.0444231991	7.6428916719
B	-0.113354723	0.01005077858	-0.1379481105	-0.0887613365

LOT	XL	XU	AUC	UCP	DIF	PCT
1	0	10	6.752	5.94543	0.80657	11.946
2	10	141	4.264	4.28706	-0.02306	-0.541
3	141	281	3.762	3.73992	0.02208	0.587
4	281	293	3.382	3.60313	-0.22113	-6.538
5	293	323	3.341	3.57455	-0.23355	-6.990
6	323	331	3.154	3.55021	-0.39621	-12.562
7	331	361	3.685	3.52768	0.15732	4.269
8	361	367	3.947	3.50732	0.43968	11.139

----------SYS=CH-47----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	2	474145.72700	237072.86350
RESIDUAL	10	11714.80799	1171.48080
UNCORRECTED TOTAL	12	485860.53499	
(CORRECTED TOTAL)	11	132801.70813	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	7.541906538	2.4952972205	1.9820028845	13.101810191
B	-0.184337563	0.0589965137	-0.3157908139	-0.052884312

LOT	XL	XU	AUC	UCP	DIF	PCT
1	0	18	6.181	5.42721	0.75379	12.195
2	18	42	5.226	4.05383	1.17217	22.430
3	42	66	4.559	3.62184	0.93716	20.556
4	66	126	3.459	3.26339	0.19561	5.655
5	126	198	2.760	2.95786	-0.19786	-7.169
6	198	358	2.307	2.68101	-0.37401	-16.212
7	358	442	2.313	2.50034	-0.18734	-8.099
8	442	585	2.695	2.38855	0.30645	11.371
9	585	630	3.463	2.31415	1.14885	33.175
10	630	666	3.085	2.28673	0.79827	25.876
11	666	678	3.671	2.27139	1.39961	38.126
12	678	690	3.852	2.26399	1.58801	41.226

----------SYS=H-54----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	2	20902.098236	10451.049118
RESIDUAL	3	226.690672	75.563557
UNCORRECTED TOTAL	5	21128.788908	
(CORRECTED TOTAL)	4	3891.050213	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	4.641352529	1.2888428554	0.53961014147	8.7430949164
B	-0.107575461	0.0780507650	-.35597202054	0.1408210988

LOT	XL	XU	AUC	UCP	DIF	PCT
1	0	6	5.248	4.28907	0.95893	18.272
2	6	30	3.388	3.43674	-0.04874	-1.439
3	30	60	2.801	3.08883	-0.28783	-10.276
4	60	83	3.402	2.93354	0.46846	13.770
5	83	89	3.083	2.87442	0.20858	6.765

----------SYS=HH-60D----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	2	123876.79818	61938.39909
RESIDUAL	2	15.42182	7.71091
UNCORRECTED TOTAL	4	123892.22000	
(CORRECTED TOTAL)	3	24351.97000	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	8.082251192	0.33275452509	6.6505082967	9.5139940869
B	-0.048393005	0.01114976000	-0.0963670774	-0.0004189327

LOT	XL	XU	AUC	UCP	DIF	PCT
1	0	3	9.2	8.05351	1.14649	12.4618
2	3	28	7.1	7.12939	-0.02939	-0.4139
3	28	63	6.7	6.72769	-0.02769	-0.4133
4	63	92	6.6	6.54988	0.05012	0.7594

----------SYS=SH-3----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	2	72573.708002	36286.854001
RESIDUAL	7	402.605540	57.515077
UNCORRECTED TOTAL	9	72976.313542	
(CORRECTED TOTAL)	8	13013.690662	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	4.691213336	0.62747560389	3.2074573940	6.1749692774
B	-0.166602909	0.02860136663	-0.2342349372	-0.0989708810

LOT	XL	XU	AUC	UCP	DIF	PCT
1	0	20	3.327	3.41726	-0.09026	-2.713
2	20	69	2.480	2.52017	-0.04017	-1.620
3	69	140	2.319	2.17062	0.14838	6.399
4	140	185	1.811	2.01012	-0.19912	-10.995
5	185	221	1.870	1.93625	-0.06625	-3.543
6	221	257	1.589	1.88416	-0.29516	-18.575
7	257	287	1.703	1.84383	-0.14083	-8.270
8	287	335	1.930	1.80330	0.12670	6.565
9	335	350	2.144	1.77423	0.36977	17.247

C.9.5 - Tactical Armament Programs

----------SYS=LLLGB----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	2	220658.75413	110329.37706
RESIDUAL	8	7.66336	0.95792

UNCORRECTED TOTAL	10	220666.41749
(CORRECTED TOTAL)	9	31936.24632

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	0.0812265050	0.00211969466	0.07633843320	0.08611457683
B	-.1706336345	0.00246086390	-.17630845162	-.16495881745

LOT	XL	XU	AUC	UCP	DIF	PCT
1	0	1600	0.0275	0.0278113	-0.00031126	-1.1319
2	1600	4550	0.0206	0.0208049	-0.00020489	-0.9946
3	4550	8290	0.0189	0.0182502	0.00064985	3.4383
4	8290	17270	0.0162	0.0162498	-0.00004977	-0.3072
5	17270	26890	0.0147	0.0147626	-0.00006259	-0.4258
6	26890	41290	0.0137	0.0137067	-0.00000673	-0.0491
7	41290	56890	0.0129	0.0128714	0.00002863	0.2220
8	56890	72490	0.0123	0.0122749	0.00002509	0.2040
9	72490	88090	0.0118	0.0118286	-0.00002863	-0.2426
10	88090	100000	0.0115	0.0115116	-0.00001165	-0.1013

----------SYS=CEM----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	2	1106261.2968	553130.6484
RESIDUAL	6	851.9021	141.9837
UNCORRECTED TOTAL	8	1107113.1989	
(CORRECTED TOTAL)	7	367517.1256	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	0.0970924048	0.01588017393	0.05823499093	0.13594981861
B	-.1753319483	0.01461763837	-.21110004666	-.13956384992

LOT	XL	XU	AUC	UCP	DIF	PCT
1	0	172	0.06924	0.0477470	0.0214930	31.041
2	172	1432	0.03038	0.0309053	-0.0005253	-1.729
3	1432	7557	0.01988	0.0226510	-0.0027710	-13.938
4	7557	21777	0.01765	0.0182182	-0.0005682	-3.219
5	21777	50227	0.01619	0.0155158	0.0006742	4.164
6	50227	85247	0.01401	0.0138422	0.0001678	1.197
7	85247	134157	0.01258	0.0127124	-0.0001324	-1.053
8	134157	171666	0.01181	0.0119788	-0.0001688	-1.429

----------SYS=GBU-15----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	2	39833.966695	19916.983348
RESIDUAL	7	246.319542	35.188506
UNCORRECTED TOTAL	9	40080.286237	
(CORRECTED TOTAL)	8	10225.399632	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	0.1696624466	0.05284477817	0.04470339937	0.29462149375
B	-.0149690405	0.04201730343	-.11432497281	0.08438689180

LOT	XL	XU	AUC	UCP	DIF	PCT
1	0	40	0.1975	0.162988	0.034512	17.475
2	40	105	0.2000	0.159211	0.040789	20.394
3	105	445	0.1439	0.156153	-0.012253	-8.515
4	445	695	0.1483	0.154307	-0.006007	-4.051
5	695	1015	0.1308	0.153368	-0.022568	-17.254
6	1015	1615	0.1718	0.152390	0.019410	11.298
7	1615	2215	0.1539	0.151524	0.002376	1.544
8	2215	2815	0.1483	0.150903	-0.002603	-1.755
9	2815	3415	0.1420	0.150419	-0.008419	-5.929

C.9.6 - Tactical Missile Programs

----------SYS=AMRAAM----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	2	3265080.1098	1632540.0549
RESIDUAL	8	1764.7593	220.5949
UNCORRECTED TOTAL	10	3266844.8690	
(CORRECTED TOTAL)	9	183807.0285	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	4.629798003	0.27246839272	4.0014787005	5.2581173046
B	-0.340271226	0.00672409173	-0.3557771594	-0.3247652935

LOT	XL	XU	AUC	UCP	DIF	PCT
1	0	194	1.233	1.16875	0.0642458	5.2105
2	194	1251	0.512	0.51911	-0.0071091	-1.3885
3	1251	3215	0.342	0.34112	0.0008837	0.2584
4	3215	6211	0.257	0.26249	-0.0054854	-2.1344
5	6211	9111	0.232	0.22133	0.0106654	4.5972
6	9111	12011	0.194	0.19817	-0.0041698	-2.1494
7	12011	14911	0.182	0.18236	-0.0003646	-0.2003
8	14911	17911	0.170	0.17043	-0.0004313	-0.2537
9	17911	20911	0.158	0.16094	-0.0029386	-1.8599
10	20911	24674	0.155	0.15239	0.0026101	1.6839

----------SYS=HARM----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	2	1583952.5788	791976.2894
RESIDUAL	9	2088.1396	232.0155
UNCORRECTED TOTAL	11	1586040.7184	
(CORRECTED TOTAL)	10	338342.8883	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	1.321855681	0.16671340218	0.94472055564	1.6989908071
B	-0.210771087	0.01436595311	-.24326940685	-0.1782727664

LOT	XL	XU	AUC	UCP	DIF	PCT
1	0	80	0.809	0.665066	0.143934	17.7916
2	80	316	0.517	0.441199	0.075801	14.6618
3	316	712	0.400	0.357009	0.042991	10.7477
4	712	1399	0.314	0.306165	0.007835	2.4951
5	1399	3144	0.249	0.261000	-0.012000	-4.8194
6	3144	5612	0.223	0.226577	-0.003577	-1.6042
7	5612	7731	0.208	0.206832	0.001168	0.5614
8	7731	9863	0.197	0.195032	0.001968	0.9992
9	9863	12863	0.184	0.184811	-0.000811	-0.4406
10	12863	15863	0.177	0.175857	0.001143	0.6459
11	15863	16961	0.196	0.170911	0.025089	12.8004

----------SYS=IIR----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	2	2025173.0565	1012586.5282
RESIDUAL	7	6291.0488	898.7213
UNCORRECTED TOTAL	9	2031464.1053	

(CORRECTED TOTAL) 8 458719.8690

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	0.3563409020	0.09506244145	0.13155214296	0.58112966105
B	-.1781343592	0.02647206583	-.24073135061	-.11553736785

LOT	XL	XU	AUC	UCP	DIF	PCT
1	0	200	0.309	0.168722	0.140278	45.3973
2	200	1100	0.135	0.114715	0.020285	15.0263
3	1100	3700	0.083	0.090095	-0.007095	-8.5478
4	3700	9429	0.082	0.074987	0.007013	8.5528
5	9429	18429	0.062	0.065363	-0.003363	-5.4247
6	18429	30429	0.057	0.059042	-0.002042	-3.5832
7	30429	42429	0.055	0.054920	0.000080	0.1453
8	42429	54429	0.053	0.052182	0.000818	1.5432
9	54429	60664	0.057	0.050581	0.006419	11.2614

----------SYS=AIM7F-R----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	2	114765.36199	57382.68099
RESIDUAL	6	386.22291	64.37049
UNCORRECTED TOTAL	8	115151.58490	
(CORRECTED TOTAL)	7	6543.29279	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	2.460174723	0.34182830823	1.6237503812	3.2965990655
B	-0.375843314	0.01864235156	-0.4214595381	-0.3302270904

LOT	XL	XU	AUC	UCP	DIF	PCT
1	0	100	0.741	0.698208	0.042792	5.775
2	100	325	0.378	0.337272	0.040728	10.774
3	325	925	0.199	0.223662	-0.024662	-12.393
4	925	1725	0.169	0.166353	0.002647	1.566
5	1725	2825	0.134	0.135364	-0.001364	-1.018
6	2825	4225	0.116	0.114627	0.001373	1.184
7	4225	5125	0.111	0.102814	0.008186	7.375
8	5125	6269	0.095	0.095458	-0.000458	-0.482

----------SYS=AIM7F-GD----------

NON-LINEAR LEAST SQUARES SUMMARY STATISTICS DEPENDENT VARIABLE TCA

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE
REGRESSION	2	28534.005468	14267.002734
RESIDUAL	4	87.152557	21.788139
UNCORRECTED TOTAL	6	28621.158025	
(CORRECTED TOTAL)	5	7732.207921	

PARAMETER	ESTIMATE	ASYMPTOTIC STD. ERROR	ASYMPTOTIC 95 % CONFIDENCE INTERVAL LOWER	UPPER
A	2.190240906	0.36956205669	1.1641860256	3.2162957859
B	-0.422980503	0.02461355446	-0.4913177613	-0.3546432450

LOT	XL	XU	AUC	UCP	DIF	PCT
1	0	15	1.551	1.20734	0.343661	22.157
2	15	85	0.379	0.44519	-0.066187	-17.464
3	85	295	0.228	0.24644	-0.018444	-8.090
4	295	505	0.195	0.17497	0.020035	10.274
5	505	1255	0.130	0.12692	0.003081	2.370
6	1255	2565	0.090	0.09079	-0.000790	-0.878

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The purpose of this study was to refine the Air Force Systems Command (AFSC) Production Rate Model that was developed in 1984 by The Analytic Sciences Corporation (TASC). In 1985, under an AFSC sponsored thesis, USAF Captain Hugh Bolton addressed various shortcomings in the TASC formulation. Bolton also investigated two alternative formulations and discovered that both models provided better estimates overall than the basic learning curve model and the TASC formulation. Further evaluation of the characteristics of these two alternatives was, however, beyond the scope of his research.

The current effort analyzed several modifications to Bolton's original alternatives in an effort to derive better results. To accomplish this, four research objectives were established.

- The first objective was to develop alternative formulations by expanding and/or altering TASC's and Bolton's formulations. These models should preserve the logic of the original formulations.

- The second objective was to compare the results between TASC'S and Bolton's model formulations and the new alternative model formulations to determine which alternatives performed better and under what circumstances.

- The third objective was: (1) to investigate if statistical relationships exist for individual variables, (2) to determine which variables appear significant for different weapon systems; and (3) to identify any patterns that may exist in the occurrence of those variables.

The research was successful in evaluating these objectives. The modified formulations developed in this research effort outperformed the existing TASC and Bolton formulations. It was recommended that AFSC incorporate the new modified formulations into its Production Rate Model.

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